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STATISTICS OF UNITED STATES STEEL CORPORATION.

At the monthly meeting of the board of directors of the United States Steel Corporation in New York, Tuesday, President Schwab presented important statistics relating to business of the corporation during the year ended March 31, 1902, and relating also to the steel and iron business of the world. The total amount of ore mined by the corporation in the United States was 13,326,705 tons, being distributed over the ranges of the Lake Superior region as follows:

	Tons.
Marquette range	1,336,215
Menominee range	1,951,160
Gogebic range	1,810,792
Vermillion range	1,872,214
Mesabi range	6,356,324
Total	13,326,705

The entire amount of steel produced in the United States during the year 1901 was 13,369,613 tons, while in the same period Germany was second with 6,394,222 tons, and Great Britain third with 4,850,000 tons. France produced only 1,465,071 tons. The furnace product of pig iron, spiegel, and ferromanganese by the corporation aggregated 7,152,121 tons, or 45 per cent. of the total production of the United States. These three items showed as follows:

	Tons.
Pig iron	6,961,543
Spiegel	134,064
Ferromanganese	56,514
Total	7,152,121

The pig iron and spiegel production of the United States in 1901 amounted to 15,878,354 tons. During the same period Great Britain was second with 8,959,691 tons, and Germany third with 8,520,390 tons. France produced 2,699,494 tons. Great Britain and Germany's combined production exceeded that of the United States by only about 1,600,000 tons. The United States Steel Corporation's ingot production was 9,034,580 tons, or 67 per cent. of the total production of the United States. Of this amount 6,262,202 tons were Bessemer and 2,772,378 tons were open hearth.

The following table shows the amount of the various finished products manufactured by the company:

	Tons.
Rails	1,675,628
Blooms, billets and slabs (for shipment)	2,481,227
Plates	742,508
Merchant steel, shapes, bars, hoops and bars	1,236,343
Sheets	415,299
Tin plate	404,746
Wire and wire products	1,078,838
Tubes and pipes	693,655
Axles and forgings	90,659
Angle bars and joints	127,582
Structural work (bridge company)	489,506
Miscellaneous	50,877
Total	9,486,868

The amount of coke manufactured was 9,079,142 tons. Under the heading of "Volume of Business" appears a statement which shows that the steel manufacturing properties made shipments, including those between companies, of 10,023,837 tons. The manufacturing cost of these was $315,662,881.63, and the selling value was $410,643,625.39, showing a profit of $94,980,793.76. The coke shipments, including coke manufactured and purchased for resale, were 10,970,768 tons, manufactured at a cost of $12,453,346.17, and of a selling value of $18,936,301.26. This shows a profit of $6,482,955.09.

The gross earnings of the transportation companies were $29,511,012.86, and the operating expenses and taxes were $16,431,006.79. This shows net earnings of $13,080,006.07. The outlays for repairs, maintenance, and extraordinary renewals aggregated for the steel making, coke and transportation properties $24,541,689.12. "In the case of mining properties," says the report, "the outlays for repairs are so closely allied to operating expenses that no separation has been attempted. It is, therefore, quite impossible to give the amount of these expenses." The outlays for repairs, etc., were divided as follows:

Steel making properties	$19,208,335.54
Coke properties	881,763.43
Transportation properties	4,451,590.15
Total	$24,541,689.12

The freight charges paid during the year by producing and manufacturing companies to transportation companies, not including charges on ore paid to its own railroads and steamship lines, aggregated $54,147,567.85.

The average number of employes in service during the year was 158,263 and the total wages paid were $112,829,198.41.

The steam yacht Noma is the first yacht that will carry apparatus for wireless telegraphy; and her owner, William B. Leeds, expects to have much pleasure with it. She is to have a speed of 17 knots, and at a lesser speed can cross the Atlantic without recoaling, owing to her large bunker space. She is 263 ft. over all, with 226 ft. waterline length. 14 ft. draught and 28 ft. 6 in. beam. With her twin screws and many new electric contrivances, the Noma will probably be the most-up-to-date yacht afloat when she appears with the fleets of New York.

HEAVY APRIL BUSINESS ON THE LAKES.

The following tables show that the early opening of navigation this year has resulted in more than two and a quarter millions of freight being moved to and from Lake Superior in the month of April, against practically no business in April a year ago. The exact figures are 2,339,234 net tons of freight moved May 1 this year; 2,545 tons to May 1, 1901, and 473,482 tons to May 1, 1900. Following are the summaries which represent business of both the Candian and United States canals:

	Vessel passages.	Registered tons.	Freight tons.
To May 1, 1902	1,679	2,322,879	2,339,234
To May 1, 1901	104	10,121	2,545
To May 1, 1900	427	539,191	473,482

MOVEMENT OF PRINCIPAL ITEMS OF FREIGHT TO AND FROM LAKE SUPERIOR.

ITEMS.	To May 1, 1902.	To May 1, 1901.	To May 1, 1900.
Coal, anthracite, net tons	44,228		43,242
Coal, bituminous, net tons	303,030		111,499
Iron ore, net tons	1,492,051		204,563
Wheat, bushels	9,408,933		2,541,627
Flour, barrels	657,404	180	97,050

REPORT OF FREIGHT AND PASSENGER TRAFFIC TO AND FROM LAKE SUPERIOR, FROM OPENING OF NAVIGATION TO MAY 1 OF EACH YEAR FOR THREE YEARS PAST.

EAST BOUND.

ITEMS.	Designation.	To May 1, 1902.	To May 1, 1901.	To May 1, 1900.
Copper	Net tons	4,469		674
Grain, other than wheat	Bushels	1,862,064		529,000
Building stone	Net tons	2,151	860	
Flour	Barrels	657,404		97,000
Iron ore	Net tons	1,492,051		204,563
Iron, pig	Net tons	1,092		
Lumber	M. ft. b. m.	34,848		
Silver ore	Net tons			
Wheat	Bushels	9,408,933		2,541,627
Unclassified freight	Net tons	3,567	20	1,393
Passengers	Number	2,238	285	129

WEST BOUND.

Coal, anthracite	Net tons	44,228		43,242
Coal, bituminous	Net tons	303,030		111,499
Flour	Barrels		180	50
Grain	Bushels		23,530	
Manufactured iron	Net tons	3,070		1,410
Salt	Barrels	42,365	500	25,277
Unclassified freight	Net tons	30,071	1,168	7,859
Passengers	Number	2,822	500	117

SUMMARY OF TOTAL FREIGHT MOVEMENT IN TONS.

	To May 1, 1902.	To May 1, 1901.	To May 1, 1900.
West bound freight of all kinds, net tons	386,684	1,665	167,804
East bound freight of all kinds, net tons	1,952,550	880	305,678
	2,339,234	2,545	473,482

IRON ORE SHIPMENTS.

Reports from canal officials at Sault Ste. Marie showing a movement of 2,339,234 net tons of freight of all kinds to and from Lake Superior in April of this year, as against no Lake Superior business in April a year ago, will certainly have a depressing effect upon lake freights. But the statements from ore shipping docks show even more forcibly what an early opening of navigation, such as we have had this year, means to the vessel interests. In April of this year 1,854,902 gross tons of ore was moved from the upper lake docks, not including shipments from the Clergue mines in Canada. This is more ore than was moved to June 1, 1901, as there was no ore moved in April of last year and only about 1,500,000 tons in May.

Mr. A. C. Diericx, chief draftsman in the hull department of the American Ship Building Co., has resigned and has accepted the position of general superintendent with the Risdon Iron Works of San Francisco. Mr. Fred A. Trist, also of the drafting department of the American company, goes with Mr. Diericx to San Francisco.

ABRAM S. HEWITT ON THE IRON SITUATION.

Unquestionably one of the biggest men in the United States is Abram S. Hewitt. He was an iron maker of national distinction when Andrew Carnegie was a boy. He has been an authority upon industrial matters for more than half a century. At times, however, his opinions have been very severely criticized. In a recent discussion of the iron situation Mr. Hewitt said:

"The present situation is, indeed, somewhat remarkable, but it is not without precedent. While it is true that structural iron is now being imported from Germany and England, the amount coming in is insignificant in comparison with the annual production of 2,000,000 tons a year by the American mills. The price of $1.75, which is quoted by the United States Steel Corporation, and which is rigidly adhered to, is really below the average. The supply of structural iron has increased enormously in the past few years, but nevertheless it has not kept pace with the demand. This is due to our country's present wonderful prosperity. The production of pig iron has increased 60 per cent. in the last ten years, when an increase of 30 per cent. would have been a normal increase. But the existing condition with regard to structural iron cannot last very long. Either the demand will lessen or the capacity of the mills will be increased to meet it.

"The first iron girders and beams ever rolled in this country were rolled by our firm. When Mr. Cooper decided to build the Cooper Institute he determined to have it fire-proof, and we began the rolling of the beams and girders. That was in 1855. The United States government was then about to undertake the building of an assay office in New York, and it was decided that it should be made fire-proof. So we stopped work on the Cooper Institute to roll iron beams and girders for that building. We delayed a second time the work on the institute to furnish beams and girders for the Harper building. And now, as I said, the production of structural iron in the United States reaches 2,000,000 tons a year. The fact that, even with that great output, the supply is now short of the demand, indicates the marvelous growth of this kind of construction. Reconstruction is the order of the day. The world is reconstructing itself. You see the evidence of it everywhere in New York—old buildings coming down, new, stronger, and finer buildings going up in their place. Those who want to rebuild and have not had the foresight to get in their orders for the needed material will simply have to wait."

"Would not the taking off of the duty on structural iron relieve the situation?"

"Well, as I said, the importations of iron from abroad have not as yet been very extensive, and I regard the present scarcity at home as merely temporary. I think, of course, that the duty should be abolished. I think that all duties should be abolished. I do not think we have any more use for them now than England had when she went to free trade. Up to the time the English decided to go to free trade, the duties which England had on most articles of import were absolutely prohibitive. But as England was manufacturing more cheaply than any other country, the levying of duties was absurd. And so the whole structure of protection in England was swept away at one fell swoop as soon as the people and the government came to a proper realization of the situation. I am an iron manufacturer, and I have always been in favor of abolishing the duty on iron."

"Would not the effect of the taking off of the duty on structural iron be to secure for the builders of the country the needed supply which they cannot get from the manufacturers of the United States at the same price which is commanded abroad?"

"That does not follow. If the duty now levied against structural iron by the United States were removed, the price at which those desiring that commodity would be able to secure it from the manufacturers of Germany and England would depend altogether upon the demand for it in the world at large. If the supply in England and Germany was so much greater than the demand that the English and German manufacturers were anxious to find a market for a surplus, then it would be quite likely that the American purchasers would secure the full benefit from the removal of the duty; that is to say, would have the duty knocked off the price which they would have to pay. But if there was a demand for the iron from other parts of the world as well as from the United States, it is just as likely that the German and English manufacturers would slap on the existing duty to the price of delivery to the United States. While I am unable to speak authoritatively as to the general demand for structural iron at the present time, I am inclined to think that the demand here is much greater than it is in Europe, and therefore that if the duty were removed the purchaser would receive, if not the full benefit therefrom, at least a substantial benefit. The condition with regard to structural iron is not peculiar. The same condition exists with regard to steel rails. It exists in other lines also. It was only the other day that building operations in Trenton had to be suspended because of a nail famine. The Trenton builders had simply forgotten to order a supply of nails ahead, and when they actually needed them they were unable to obtain them. We are having just at present what you might call an epidemic of building and we have run a little short of material. But the embarrassment cannot be other than temporary."

LUCANIA AND PHILADELPHIA RACE.

Wireless telegraphy has a new use—to start races between ocean liners. Heretofore the steamers plying between this and European ports have only been able to race when they could see each other. Wireless telegraphy makes it just as easy for them to race when they are 100 miles apart as it would be if they were only 100 yards. It is something like this: The wireless operator on one steamer gets a message from another somewhere out of sight on the deep.

"Where are you at?" they ask each other. They learn that they are practically on an even line.

"I'll be waiting for you on the pier at New York," each tells the other, and when the officers of each vessel know the position of the other they crowd on steam. They don't race, of course; just try to get to port as quick as they can.

Such was the case of the Philadelphia of the American line and the Lucania of the Cunard line, the former of which arrived in New York last Saturday morning and the latter Friday night. Despite the fact that they started practically even on last Tuesday, the Lucania reached port first. In order to do it, the Lucania had to make the best run she has made on the westward trip from Liverpool and Glasgow in four years. The Philadelphia made a supreme effort, and though she came in behind she broke her best previous record for the westward run from Southampton by 1 hour and 30 minutes. Although no confirmation of the race could be obtained from the officials of either line, the passengers on the Lucania say that the steamship's speed was notably increased from the time when she was in communication with the Philadelphia by means of wireless telegraphy. On Tuesday the operator on the Lucania received a message from the Philadelphia, from which he learned that the two vessels were nearly abreast, although about 50 miles apart. For several hours the two operators talked, each one jokingly telling the other that he would be on the pier to meet him when he arrived in New York. The next day the Lucania made 539 miles, her best day's mileage for the voyage. On Thursday the run only lacked nine miles of the record of the day before, and the increased speed was kept up all the way to Nantucket. The time of the Lucania's passage from Daunt's Rock to Sandy Hook lightship was 5 days, 15 hours and 59 minutes. Capt. Alexander McKay said that only for the fog which was encountered on the passage he would have arrived in time to land his passengers on Friday evening. On Wednesday the Philadelphia made 507 knots. Her best previous single day's run was 505 miles, on Nov. 8 last. The Philadelphia's best previous run from Cherbourg to Sandy Hook lightship was 6 days, 14 hours and 35 minutes. The run ending this week was made in 6 days, 13 hours and 5 minutes.

CANADA WANTS EMIGRANTS.

The Canadian house of commons has just voted $442,000 for immigration purposes. This sum is to be spent in efforts all over the world to induce more people to come to Canada and make the dominion their home. Principally it is desired to encourage farmers or persons willing to become farmers. The minister of the interior told the house of commons that his department considered that there was a sufficient number of mechanics and artisans. It was agriculturists that were needed. Some of the uses to which this immigration fund is put are interesting. For instance, $4,000 was spent last year in making a copybook for British children which set forth such facts as these: "Canada has rich farm lands:" "Canada is rich in minerals:" "Canada's fisheries are among the largest in the world." The idea, of course, is to associate Canada in the minds of youthful Britons with the idea of a land to which it would be desirable for them to go if ever they desired to emigrate. The sum of $60,000 more was spent in salaries to immigration agents in Canada, who take care of the incoming colonists and see them settled; $27,000 more is spent in a similar way in the United States; and $20,000 in Great Britain and Ireland. The rest goes in pamphlets and literature. The great idea throughout Canada is to attract British emigrants. In the nine years preceding 1890, more than 1,500,000 emigrants left the United Kingdom, of whom only 13 per cent. were bound to Canada, while no less than 68 per cent. of British emigrants were bound to the United States. Between 1891 and 1900 at least 72 per cent. of British emigrants went to the United States and still only 13 per cent. to Canada. These facts rankle in Canadian bosoms and the immigration literary fund is readily voted each year.

"There are three well marked lines in regard to the question," one of the Ottawa papers says this week. "First, that every Canadian who is kept at home and prevented from going to the United States is worth two immigrants; second, that the most desirable immigrant we bring to our shores and the most welcome is the man of English, Irish or Scotch birth; third, that next to these, highly desirable settlers are drawn from the United States, Germany and the Scandinavian countries. Every government in Canada may be relied on to do every thing that patriotism can suggest to keep our own people from going to the United States."

The paper takes comfort from reports that some people are moving from the United States to Canada. It puts the number at 10,000 a year and tells of the arrival of a coach containing seventy settlers with seventeen carloads of effects and stock at Alberta, all from the United States side of the border. It quotes this editorial welcome extended to them by the local paper, the Inisfail Free Lance, under the heading of "A Welcome Invasion:" "The newcomers are of that hardy, energetic class of agriculturists who have done so much toward making the country west of the Mississippi the garden of the United States. We welcome them to the broad acres and the sunny scenes of Alberta, and expect ere long to see the virgin prairies around their settlement transformed into cultivated fields."

Whether from England, Germany or the United States, Canada wants new settlers, is not getting them at the rate she desires and is willing to go a long way to encourage them to people her vacant stretches of territory.

President A. J. Cassatt and Vice-President C. E. Pugh and Samuel Rea of the Pennsylvania railroad have been in Pittsburgh lately investigating the extent and causes of the extraordinary congestion of freight traffic in that territory. The output of coal and manufactured products and the influx of ore, it is admitted, exceed the carrying ability of the railroads, and several railroad spurs and short cuts are being hastily built to facilitate the movement of the unprecedented accumulation of freight cars. The Pennsylvania management is considering the advisability of offering a premium for the early delivery of the thousands of freight cars which were ordered from different car manufacturing companies some time ago.

In accepting the resignation of Lieut. J. H. Royes, now attached to the Asiatic station, Secretary Long announced that hereafter young naval officers will not be allowed to leave the service simply to enable them to improve their financial condition in commercial or other private pursuits, and that resignations will not be accepted except for excellent reasons. The secretary believes that the government is entitled to their services after giving these officers the advantages of an education at Annapolis.

Capt. A. Albers of the Hamburg-American steamer Deutschland fell dead from heart disease in the chart house of his vessel as she was approaching the port of Cuxhaven last week. He expired in the arms of the first officer, who caught him as he fell. Emperor William sent a telegram to the company expressing his sorrow. Capt. Albers had spent his entire life at sea and was one of the most popular officers in the transatlantic service.

PRESIDENT ROOSEVELT ADDRESSES NAVAL GRADUATES.

President Roosevelt personally handed his diploma to each member of the graduating class at the naval academy at Annapolis last week and then addressed the class as a whole. He said:

"In receiving these diplomas you become men who above almost any others of the entire union are to carry henceforth the ever-present sense of responsibility which must come with the knowledge that on some tremendous day it may depend upon your courage, your preparedness, your keen intelligence and knowledge of your profession whether or not the nation is again to write her name on the world's roll of honor or to know the black shame of defeat. We all of us earnestly hope that the occasion for war may never come, but if it has to come, then this nation must win; and the prime factor in securing victory over any foreign foe must of necessity be the United States navy. If the navy fails us, then we are doomed to defeat, no matter what may be our material wealth or the high average of our citizenship. It should therefore be an object of prime importance for every patriotic American to see that the navy is constantly built up, and above all, that it is kept to the highest point of efficiency, both in material and personnel. It cannot be too often repeated that in modern war, and especially in modern naval war, the chief factor in achieving triumph is what has been done in the way of thorough preparation and training before the beginning of the war. It is what has been done before the outbreak of war that is all-important. After the outbreak, all that can be done is to use to best advantage the great war engines, and the seamanship, marksmanship, and general practical efficiency, which have already been provided by the forethought of the national legislature and by the administrative ability, through a course of years, of the navy department.

"A battleship cannot be improvised. It takes years to build, and the skill of the officers and crew in handling it aright can likewise never be improvised, but must spring from use and actual sea service and from the most careful, zealous and systematic training. You, to whom I give these diplomas, now join the ranks of the officers of the United States navy. You enter a glorious service, proud of its memories of renown. You must keep ever in your minds the thought of the supreme hour which may come when what you do will forever add to or detract from this renown. Some of you will have to do your part in helping construct the ships and the guns which you use. You need to bend every energy toward making these ships and guns in all their details the most perfect of their kind throughout the world. The ship must be seaworthy, the armament fitted for the best protection to guns and men, the guns in all their mechanism fit to do the greatest possible execution in the shortest possible time. Every detail, whether of protection to the gun crews, of rapidity and sureness in handling the ammunition and working the elevating and revolving gear, or of quickness and accuracy in sighting, must be thought out far in advance, and the thought carefully executed in the actual work. The best ships and guns and the most costly mechanism are utterly valueless if the men are not trained to use them to the utmost possible advantage. From now on throughout your lives there can be no slackness on your part. Your duty must be present with you, waking and sleeping. You have got to train yourselves, and you have got to train those under you in the actual work of seamanship, in the actual work of gunnery. If the day for battle comes you will need all that you possess of boldness, skill, determination, ability to bear punishment, and instant readiness in an emergency. But though without these qualities you can do nothing, yet even with them you can do but little if you have not had the forethought and set purpose to train yourselves and the enlisted men under you aright. Officers and men alike must have the sea habit; officers and men alike must realize that in battle the only shots that count are the shots that hit, and that normally the victory will lie with the side whose shots hit oftenest. Seamanship and marksmanship—these must be the two prime objects of your training, both for yourselves and for the men under you."

MILLS ARE TAXED TO THEIR CAPACITY.

A New York dispatch announces that manufacturers of structural material agree that the capacity of their mills will be inadequate to supply the demand during the current year. In fact a number of the concerns have booked all the business they can take care of this year and consumers who failed to place their orders earlier are looking abroad for relief. A number of large orders for foreign structural steel have been placed during the past several weeks and indications are that shipments of this class of material to this country will reach large proportions before the close of the present year. The capacity of practically all the steel rail mills has been taken for the entire year and indications are that more business will be carried forward into 1903 than ever before in the history of the country. The Grand Trunk Railway Co. has just placed an order for 25,000 tons of steel rails in England.

The United States Steel Corporation, and other concerns embraced in the so-called steel rail pool, continue to quote $28 a ton for rails, and it is not likely that any change will be made in the price for a long time to come. Little advantage would be gained thereby as the capacity of the mills, as mentioned, has practically been taken for the entire year. The rails for immediate delivery that are now being sold command a price $5 above the schedule price of the steel rail pool, but the transactions of this character are too small to warrant their having any effect on market conditions. The representatives of the steel rail pool will meet in the fall to fix the price of rails for 1903, but according to a manufacturer who keeps in close touch with the affairs of the steel rail mills, no advance is contemplated. In fact the amount of business now booked indicates that a large percentage of the rails will not be delivered until well into next year.

The demand for structural material corresponds very closely with that of rails. The structural concerns are so far back in their deliveries that they see fit to turn away considerable business. As a result, the construction of new steel mills is greatly delayed, and indications are that the production from independent enterprises will not be felt to any extent for at least two years. The enormous demands of the railroads of the country for steel rails, steel bridges and steel cars is one of the largest factors in the unprecedented accumulation of orders calling for the entire output of the steel industries for months ahead. It is estimated that at least 2,500,000 tons of steel rails alone will be produced during the current year.

An idea of how the consumption of steel by the railroads has grown during the last twenty years may be gained from the statement that in 1880 of a total track mileage of 115,647 only 33,680 miles were laid with steel rails. In other words only 29.1 per cent. of the total track mileage was laid with steel rails, the remaining 70.9 per cent. representing iron rails. By 1890 the percentage of steel rails had increased to 80.4 per cent. and in 1900 the percentage was 92.9 per cent. The constant increase in the percentage of steel rails to the total track mileage since 1890 may be gained from the following table:

Year.	Miles steel rails.	Mileage total trackage.	Steel to total, per cent.
1890	167,458	208,152	80.4
1891	174,775	214,529	81.5
1892	182,711	221,629	82.4
1893	190,718	227,853	83.7
1894	197,491	232,755	84.9
1895	206,381	235,031	87.8
1896	210,290	238,730	88.1
1897	215,658	241,701	89.2
1898	220,804	245,239	90.0
1899	228,976	250,363	91.5
1900	239,629	257,853	92.9

According to Poor's Manual the mileage of the railroads of the country at the close of 1900 was 192,161 miles, with 65,691 miles of additional second track and sidings. Accordingly there were 47,400 miles more steel rails in the country that year than there were miles of main track.

The result of these changes, which have occurred among the railroads, has been to not only cause a large consumption of steel by them at present but to continue this demand in the future. There is probably at the present time between 255,000 and 260,000 miles of main track, second track and sidings in the United States, practically all of which is laid with steel rails. The life of a steel rail varies very much on various roads according to the density of traffic. Probably fifteen years would be a fair average. On this basis the railroads would have to replace 60,896,000 yards of track each year with new rails. On an average of 65 pounds a yard this would call for practically 2,000,000 tons of steel rail a year.

A NEW HOSPITAL SHIP.

Plans have been prepared by B. B. Crowninshield of Boston for a new floating hospital for children of that city. The length over all is 192 ft., beam 34 ft. and depth 12 ft. There will be steam windlasses to raise the anchor, steam pumps and a complete electric lighting plant. A special feature will be a regular hospital steam cylinder for the disinfection of all linen used on the boat. The ship has four decks. Forward of the main deck are two wards with sixteen beds each, and between these wards are examining and treatment rooms. A little further aft is a room for the preparation of babies' food, where milk may be prepared in nearly forty different ways. Other quarters on this deck are doctors' staterooms, dining rooms for doctors, nurses and guests, shower baths and toilet rooms, resident physician's room and another for the superintendent of nurses, and an office, while all around the boat is a large space for patients to wait until assigned to their special wards. On the lower deck forward are a number of contagious wards. A large boiler and dynamo room with a steam disinfector and atmospheric plant, which makes it possible to maintain an even temperature of 74° though the outside climatic conditions are quite different, thus keeping the air dry and cool even under the most unfavorable conditions, occupies the midship section. Among other features of this deck are an autopsy room and morgue, refrigerator, linen and sewing room, dining room for mothers and children and ample storage facilities. On the upper deck are four large wards forward and aft, with sixteen beds each, examining and treatment rooms, a pharmacy, an excellent system of dumb waiters to the decks below and the one above, so cleverly arranged that the one leading to the contagious wards does not come in contact with the others. Shower baths for older children, an operating room, a number of isolating wards with two beds each side on both sides of the deck amidship, are also some of the features of this deck.

SHIP BUILDING DURING TEN MONTHS.

The bureau of navigation reports 1,072 sail and steam vessels of 329,499 gross tons built in the United States and officially numbered during ten months ended April 30, 1902, as follows:

	WOOD.				STEEL.				TOTAL.	
	SAIL.		STEAM.		SAIL.		STEAM.			
	No.	Gross tons.	No.	Gross tons.	No.	Gross tons.	No.	Gross tons.	No.	Gross tons.
Atlantic and gulf	490	58,668	215	15,594	5	8,869	46	70,542	756	153,673
Porto Rico	2	34	.....	.....	.....	.....	.....	.....	2	34
Pacific	39	22,445	59	6,972	.....	.....	2	10,707	100	40,124
Hawaii	.....	.....	1	13	.....	.....	.....	.....	1	13
Great lakes	6	161	49	2,173	.....	.....	39	126,376	94	128,710
Western rivers	6	114	110	6,646	.....	.....	3	185	119	6,945
Total	543	81,422	434	31,398	5	8,869	90	207,810	1072	329,499

During the corresponding ten months ended April 30, 1901, 881 sail and steam vessels of 310,132 gross tons were built in the United States and officially numbered, as follows:

	WOOD.				STEEL.				TOTAL.	
	SAIL.		STEAM.		SAIL.		STEAM.			
	No.	Gross tons.	No.	Gross tons.	No.	Gross tons.	No.	Gross tons.	No.	Gross tons.
Atlantic and gulf	361	64,226	153	9,261	7	10,012	31	61,745	552	145,244
Porto Rico	----	----	----	----	----	----	----	----	----	----
Pacific	45	21,373	65	8,294	----	----	5	6,053	115	35,720
Hawaii	----	----	----	----	----	----	----	----	----	----
Great lakes	5	108	33	4,121	5	11,236	34	104,354	77	119,819
Western rivers	50	917	86	7,870	----	----	1	562	137	9,349
Total	461	86,624	337	29,546	12	21,248	71	172,714	881	310,132

SAN FRANCISCO AS A SHIPPING PORT.

A table showing the growth of shipping from San Francisco during the past decade is very interesting. Ten years ago San Francisco had only three regular foreign-going steam lines—the Pacific Mail Steamship Co., operating fifteen steamers, ranging from 2,000 to 5,000 tons, plying between San Francisco, China, Japan and Central American ports; the Occidental & Oriental Steamship Co. operating three 5,000-ton steamships between China and Japan, and the Oceanic Steamship Co. operating five 3,000-ton steamships between San Francisco, Honolulu and Australia. The coasting lines were the Pacific Coast Steamship Co., with sixteen steamers, ranging from 350 to 3,300 tons; the Oregon Railway & Navigation Co., with two steamers of 2,300 and 2,800 tons, respectively; the Alaska Commercial Co., with four steamers of 350 to 1,000 tons, and various other owners, operating about forty steamers on the coast, ranging from 300 to 600 tons. They, together with fifteen cannery tenders and ten whalers, completed the ocean fleet.

The total added tonnage for the last three years is 368,000 tons. The following is a list of vessels added to the San Francisco fleet within three years. All are not yet in commission, but will be before the close of the present year. It makes a showing unparalleled in the shipping history of the world. The tables follow:

OCEANIC STEAMSHIP CO.

Name.	Lg'th ft.	Br'th ft.	Depth ft.	Tonnage.	Name.	Lg'th ft.	Br'th ft.	Depth ft.	Tonnage.
Sierra	400	50	26	6,000	Sonoma	400	50	26	6,000
Ventura	400	50	26	6,000					

PACIFIC MAIL STEAMSHIP CO.

Korea	572	63	40	11,500	Siberia	572	63	40	11,500

AMERICAN HAWAIIAN STEAMSHIP CO.

Alaskan	488	57	35	8,700	Oregonian	435	51	33	6,000
Texan	488	57	35	8,700	Hawaiian	435	51	33	6,000
Arizionian	488	57	35	8,700	Nebraskan	371	46	34	5,300
American	435	51	33	6,000	Nevadan	371	46	34	5,300
Californian	435	51	33	6,000					

BOSTON STEAMSHIP CO.

Shawmut	505	58	40	11,200	Pleiades	340	47	28	3,753
Tremont	505	58	40	11,200	Hyades	340	47	28	3,753
Lyra	331	47	25	4,417					

INTERNATIONAL LINE.

Ohio	343	43	25	3,488	Pennsylvania	343	43	25	3,343
Indiana	343	43	25	3,335	Conemaugh	300	37	24	2,328

PACIFIC COAST STEAMSHIP CO.

Senator	280	38	19	2,409	Ramona	210	32	11	1,500
Spokane	284	38	18	2,036					

UNITED STATES TRANSPORT SERVICE.

Grant	445	49	30	5,658	Warren	370	44	26	4,243
Sherman	445	49	30	5,780	Hancock	450	45	36	5,305
Sheridan	445	49	30	5,673	Egbert	320	40	20	2,903
Logan	445	49	30	5,672	Sumner	351	43	26	3,458
Thomas	445	50	30	5,713	Rosecrans	326	38	21	2,976
Buford	370	44	26	3,732	Lawton	336	43	22	3,497
Kilpatrick	370	44	26	3,722	Dix	445	52	24	6,839
Crook	420	47	26	4,126	Slocum	148	29	18	581
Meade	488	44	35	5,641					

TOYO KISEN KAISHA.

American Maru.	423	51	29	5,000	Tokio Maru	423	51	29	5,000
Honkong Maru.	423	51	29	5,000					

PACIFIC STEAM NAVIGATION CO.

Guatemala	359	43	19	3,227	Chile	350	43	19	3,225
Palena	350	42	19	2,553	Santiago	350	45	22	2,953
Colombia	359	43	19	3,335	Panama	418	52	37	6,000
Tucapel	380	44	19	2,700	Mexico	418	52	37	6,000
Arequipa	350	45	19	2,953	Victoria	418	52	37	6,000
Limari	351	42	19	2,696	California	418	52	37	6,000
Peru	350	43	19	3,225					

KOSMOS LINE.

Sesostros	382	48	26	4,750	Neko	345	44	26	3,648
Octavia	378	48	26	4,718	Hathor	340	44	25	3,647
Luxor	340	44	25	3,648	Pentaur	323	40	24	3,047
Hermonthis	382	48	26	4,782	Abydos	323	40	24	3,047
Serapis	321	40	23	2,546	Minantia	340	44	25	3,640
Tanis	331	42	23	2,870					

COLLIERS.

Enterprise	318	37	26	2,675	Edith	276	37	27	2,369
Argyl	320	41	24	2,953	Asuncion	242	42	26	2,196
Meteor	253	43	24	2,301					

STEAM SCHOONERS.

Acme	177	37	15	294	Avichak	200	35	16	1,063
Arctic	145	32	11	392	Luella	137	32	10	412
Aberdeen	169	34	11	499	Mandalay	142	33	12	438
Chilcat	115	24	10	172	Robert Dollar	199	38	13	798
Coronado	186	36	12	578	Rainier	205	38	13	800
Despatch	175	36	14	698	Santa Ana	182	36	24	1,250
Eureka	142	26	12	484	San Pedro	163	34	12	456
Jno. S. Kimball.	223	38	24	1,588					

NOTE.—All except Toyo Kisen Kaisha (Japan), Pacific Steam Navigation Co. (Great Britain), and the Kosmos line (Germany) fly the flag of the United States.

In addition are the Brooklyn, Olympic, Prentiss, Santa Monica, W. H. Kruger, Argo, Guallala, Inqua, South Bay, G. C. Lindauer, King Fisher, Defiance, Nahualate, Columbia, Sea Prince, George F. Haller, Shelikoff, Redwood City, Chehalis, ranging from 200 to 1,100 tons. The following inland steamers have been added: Tamalpais, San Pablo, Elaine, Newtown, Valette, General Frisbie, Onisbo, Richmond, Union, St. Helena, J. R. McDonald, Alitak, Chignik, Dorothy, Islam and others, ranging from 50 to 1,750 tons.

AROUND THE GREAT LAKES.

The Wells elevator, which burned at Buffalo a few days ago, was one of the last of the wooden elevators erected at that port. The loss in elevator and grain was something in the neighborhood of $400,000.

It was thought some time ago that the large steamer building at the Craig works, Toledo, for Thomas Adams of Detroit would be named William McKinley, but it is now announced that her name will be Thomas Adams and that a change to Langham will be made in the wooden steamer that now bears the name Thomas Adams.

Grain receipts at Buffalo for the month of April aggregated 13,081,274 bushels, distributed as follows: Wheat, 8,013,442 corn, 1,396,988; oats, 1,714,840; barley, 707,680; rye, 528,100; flaxseed, 720,224. Flour receipts were 763,709 barrels, or an equivalent of 3,818,545 bushels of grain. Total lumber receipts were 8,940,000 ft. and iron ore 62,489 tons.

Soundings made since the accident to the steamer Choctaw in Marquette harbor show that there is a little less than 18 ft. of water over the spot where the steamer struck. The shoal place is abreast of the end of the breakwater and in line with the ore dock. It had been supposed the water was much deeper there. Next week systematic soundings will be taken in the upper harbor and at its entrance by the tug Schenck.

Several changes have been made in captains of vessels of the Pittsburgh Steamship Co. (Steel Corporation) as a result of the resignation of Capt. A. J. Greenley, who has taken command of the new Hanna steamer Fitch. Capt. H. J. Regan, who was mate of the steamer Van Hise, was promoted to master of the steamer John B. Trevor. Capt. John Dunn, who was in the Trevor, takes the steamer Maritana, and Capt. W. E. Chilson succeeds Capt. Greenley as master of the Rensselaer.

Another of the several large steel freight steamers that have been under construction at the Chicago works of the American Ship Building Co. during the past winter was launched Saturday. This latest vessel is the Milwaukee, a fine package freight steamer for the Western Transit Co., Buffalo, which is costing about $280,000 and is to have capacity for about 4,100 gross tons of freight. She is 345 ft. over all, 325 ft. keel, 44 ft. beam and 28 ft. depth, and will have triple-expansion engines of 23, 38 and 64 in. cylinder diameters by 40 in. stroke. Steam will be supplied from three Scotch boilers of 12 by 11½ ft., fitted with the Howden system of hot draft. The boiler pressure is to be 180 lbs.

PROGRESS OF WORK AT MORAN BROS. PLANT, SEATTLE.

This week Moran Bros. Co., Seattle, Wash., are putting down keel of the United States lighthouse tender Heather, which will be a companion boat to the Columbine, though of later design and more modern construction. The Heather has already been thoroughly described and illustrated in the Review. The Heather will be 175 ft. in length and will cost $125,000. The vessel will be made staunch and strong to withstand the racing waters off the coast of Oregon. The finishing work on the big shed under which the battleship Nebraska is to be constructed will be begun in a few days. As it stands now the shed covers only that part of the grounds where will be kept the tools and machinery used in the construction of the war vessel. The shed will be extended toward the water front for a distance of 400 ft. The ship will be 450 ft. in length. The piling on which the keel will rest has been set. The finishing touches on the steamer Oregon, which has been at Moran Bros.' wharf the greater part of the winter, are now about completed, and the ship will leave the yard in a week or ten days. A general overhauling was given the hull, the upper works and the machinery. Repairs on the Conemaugh also are about completed. The Manauense arrived at the wharf this week and a new thrust shaft will be placed in position, which will require a week or more. The four-masted schooner Erie will leave the dry dock at Moran's this week and the dredger San Diego will take its place. The San Diego was partly burned not long ago and will require extensive repairs. The coast survey steamer Patterson will follow it upon the dry dock.

TRIAL OF TORPEDO BOAT DESTROYER DALE.

The torpedo boat destroyer Dale, built by the William R. Trigg Co., Richmond, Va., successfully completed her official trials last week on the Barren island course, off the mouth of Patuxent river, Chesapeake bay. The Dale is the second of the sixteen destroyers contracted for by the government in November, 1898, to complete her trials, her sister ship, the Decatur, built by the same company, having the distinction of being first, and is now in actual service. Both ships are identical in every respect, their principal dimensions being as follows: Length, 250 ft.; beam, 23 ft.; depth, 14 ft.; displacement, 450 tons. They have four Thornycroft boilers and two sets of four-cylinder triple-expansion engines, driving twin screws. The machinery develops 8,000 I.H.P. at full speed. Their armament consists of two 3-in. semiautomatic rapid-fire guns, five 6-pounders and two 8-in. Whitehead torpedo tubes.

TWO ST. CLAIR RIVER CHANNELS.

Since visiting Detroit recently, where he met the engineers in charge of dredging operations on the St. Clair and Detroit rivers, Capt. Geo. P. McKay is inclined to undertake measures that will induce the vessel masters to soon make use of the double channel system in the St. Clair river. The engineers say that after three or four years of dredging, the channel between St. Clair middle ground and St. Clair, as well as the stretch between Stag island and the mainland, now contains a depth of water suited to the largest ships of the lakes. These stretches will be swept shortly, and following this work it is expected that down-bound vessels will keep to the American shore from the head of Stag island down to and below St. Clair.

The Dutch merchant navy consisted on Dec. 31 last of 652 vessels, measuring altogether 382,102 registered tons, against 638 vessels and 346,783 tons at the end of the year 1900. There is, therefore, an increase of fourteen ships and 35,319 register tons. Of the whole number of vessels, 235 are steamers measuring in the aggregate 306,694 registered tons; besides which there are seven full-rigged sailing ships (11,926 tons) thirty barques (28,281 tons), two brigs (507 tons), and a number of smaller sailing craft.

ENGLISH VIEW OF THE SHIPPING COMBINATION.

The Engineer of London discusses the steamship combination in the following language:

Within the last few days it has been announced that a "combine"—purists must pardon us for using an Americanism to avoid an ellipsis—has been formed in the Atlantic shipping trade. Mr. Pierpont Morgan appears to play once more the part of deus ex machina. Of the details of the arrangement we cannot write. Nothing, indeed, has been made public. Liverpool and New York are alike full of assertions and contradictions. The broad facts tend to show that certain of the leading Atlantic steamship companies, with the exception of the Cunard Steamship Co., have entered into some form of agreement with American capitalists which will give Americans the control of the Atlantic trade, although the ships will continue to sail under the British flag. At any moment, we are assured, the Cunard company may join the combination. The two principal German Atlantic companies have entered into mutual arrangements; and although their ships will not be under American control, they will act in all respects as though they had followed the example of the other great shipping companies. Liverpool, we are told, is seriously threatened, for Southampton is to be made the principal port of call. Much more than this has been said both in American, German and English papers; but at the moment nothing is known with certainty beyond the few meager facts we have stated.

The first question—indeed, the only question of paramount importance that can be asked—is, what will be the effect of the combination in this country? In dealing with the problem it will be advisable to leave sentimental considerations on one side; they can help not at all, and they may lead to mistakes. No doubt it is unpleasant in various ways to learn that the control of a magnificent enterprise, wrought out through years of toil by Englishmen of superlative ability as engineers, as ship builders, as traders, should pass into the hands of Americans who have contributed in no way to the development of the entire splendid system; but hard facts have little to do with sentiment. We conceive the position to be very simple. For years past various Atlantic shipping companies have been competing; they have been heavily handicapped—rightly or wrongly—by British shipping legislation; the ships have not been worked in the most economical way, and the profits earned have paid but meager dividends. Mr. Morgan, associated with two or three others only second to him in influence, appears to have the power of obtaining from American capitalists unlimited sums of money. The United States is an enormously wealthy country. Mr. Morgan, holding that the railway companies in which he and his following are interested would be placed in a better position if they had more control of the Atlantic trade, and holding that the shipping business can be managed in such a way as to earn substantial profits, has carried out the arrangement meagerly but sufficiently described above. At present nothing is known as to the actual amount of money expended. Mr. Morgan could not obtain the control he desired unless he was in a position to acquire shares; and the probability is that he and his syndicate have bought very large blocks of shipping companies' shares at high prices. It remains to be seen whether the result will be a pecuniary success. It is stated, indeed, at the other side of the Atlantic, that Mr. Morgan has greatly over-capitalized the steel trust. It is not improbable that we shall hear the same thing said of the Atlantic union. Only time can settle whether Mr. Morgan has or has not paid too much. It is very difficult to say with certainty what the effect of competition has been hitherto in reducing profits. No doubt, if ships were run with half cargoes and many empty staterooms and emigrant berths there would be a loss, which might be avoided by reducing the number of boats run in any one week or month or year. We fail to see how a loss or a very small profit can be turned into something fairly remunerative in any way but the one. Such sailing arrangements must be made as will ensure the ships being full. The system would be like that carried on by the owners of the pleasure boats at south coast watering places, who will not sail until they have a sufficient number of trippers on board. Instead of a steamer or two a day from Liverpool we may have but three or four a week. Our readers can easily carry out this line of argument for themselves.

We have next to consider what the operation of the monopoly will be. To all intents and purposes this consolidation of the interests of lines hitherto competitive will constitute a monopoly. We constantly hear it said that a monopoly must be mischievous; that it is ruinous to trade in the long run, and very bad indeed for the consumer. Is this really the fact? We can name various branches of trade which very closely resemble monopolies, but it would not be easy, we think, to prove that they have done harm. In fact, it admits of proof that, unless monopolies are recognized, trade languishes and enterprise is killed. A very remarkable example of this kind is supplied by the slow development of the electrical industry in this country. There was plenty of capital available, and one scheme after another for electric lighting was proposed, but they all came to nothing, because parliament, fearing a monopoly, insisted on giving municipalities compulsory purchasing powers, to come into effect within a few years. The result was fatal, and until a change was made, granting a monopoly to each company for a reasonable term of years, nothing was done. If Mr. Morgan and his syndicate can cut down working expenses and the cost of transport between this country and the United States, the result on the whole ought to be satisfactory. We do not for a moment think it is likely that the result of the transaction will be to make Atlantic transport more expensive, or less facile. It is quite possible that speeds may be cut down, but even that is doubtful.

Two other questions suggest themselves, and they are important. First, how shall we stand with regard to the ships which have been built and fitted by arrangement with the admiralty, so as to be available as auxiliary cruisers during time of war? Next, how will the new combination affect the royal naval reserve? It may well be that its effect will be gradually to substitute American seamen for men of our nationality, and so narrow very seriously our recruiting area for the reserve. As matters stand now it is difficult enough to keep up the reserve and any contemplated change which would tend to throw obstacles in the way of manning the fleet must be carefully watched. We hope that satisfactory replies to these questions may be forthcoming. It may very pertinently be asked how it came to pass that the companies concerned did not amalgamate long since in their own interests without American aid? The answer must be, we think, that the dominant influence of a master mind was lacking. All the great work of the world has been done by a very few men. The wealth of the United States is at the moment due almost entirely to the exertions of a comparatively small number of individuals. In South Africa we all know what Cecil Rhodes did. Mr. Morgan has been called the Napoleon of finance. It is impossible to read about Mr. Morgan's schemes without realizing that, probably unwittingly, he is the very incarnation of Mr. Rhodes' ideas of the federation of the English and German speaking races of the world. The tendency of such operations as the last which he has carried out is to obliterate the dividing lines between the three nationalities. The combination of three nations to carry on the most wonderful trade that the brain of man has ever conceived is, no doubt, a most remarkable achievement—one which promises to bring the countries into closer and more friendly relations than have hitherto existed.

SENATOR HANNA ON THE COAL SITUATION.

Senator M. A. Hanna in an interview in Philadelphia characterizes the situation in the anthracite coal region as extremely delicate. The work of the conciliation committee was ended, said the senator, when it brought together the operators and the representatives of the miners' union.

"I want to emphasize the fact," continued Senator Hanna, "that the conferences between the operators and the miners were satisfactory. Three conferences were held and the proceedings were conducted in the best spirit. I think the operators formed a favorable impression of Mr. Mitchell and gave him credit for honesty and sincerity in his efforts to change the conditions of the miners. On the other hand, Mr. Mitchell appreciated the consideration shown him and the interests he represents. Unless a bitter and protracted strike should occur, I believe much good will come out of the conferences. I am of the opinion that they will lead to better conditions between capital and labor. I am in favor of meetings between employer and employes to consider differences. I want the people to thoroughly understand the position of the civic federation. It can do only two things—exert its influence to prevent a strike or arbitrate when a rupture has occurred, at the request of both parties to the dispute. In this case the civic federation has done all within its province. It brought together through its conciliation committee the representatives of the miners' union and the operators. In the evolution of things rapidly taking place in this country the conference of employers and employes is one of the conditions that must necessarily be a part of it. The progress and development of our industries must be accompanied by the development and improvement of the laboring class."

Asked whether the civic federation experienced any difficulty in arranging the conferences between the operators and the miners, Senator Hanna said: "On the contrary, I found that the operators were quite willing to go half way in this matter. They are all sensible, broad-gauge business men, who, while they desire to protect their own interests, are wise enough to see the drift of things.

"The peculiar situation of the anthracite mining industry," continued the senator, "makes the proposition most difficult. The combination of the railroad and mining interests brings forward the question of tonnage, and this and threatened competition from the enormous production of bituminous coal constitute matters which must be considered. This is the foundation of the operators' argument. It is not a mere selfish interest that impels them to the stand they have taken, but the proposition is difficult to explain to the rank and file of the workers in and about the mines. It is my hope that when they are educated to understand these conditions they may be considerate and not governed by prejudice in future actions. If my advice had been followed a longer time would have been taken before the present crisis was reached, in order that these things could be explained and better understood. President Mitchell's statement was hastened by the fact that scraps of information were given to the public, embarrassing him with his men. When it is considered that two-thirds of the mine workers are foreigners, speaking six, eight, or ten different languages, it can be readily understood that they are difficult to control."

A POSSIBLE BENEFIT TO LAKE TRADE.

The following dispatch from New York, dealing with the probable policy of the steamship combination regarding apportionment of freight to different ports of the Atlantic seaboard, is of interest to the lakes:

"Among shipping agents it is the general expectation that the formation of the steamship combination will eventually build up the commerce of this port at the expense of Boston, Philadelphia and other ports. Fear of such a result has been expressed in both of the ports mentioned, which the promoters of the combine have sought to quiet with assurances that the various lines will continue to observe their present service arrangements. But it is pointed out by New York shippers, wh oare encouraged over the prospect of better business a few years hence, that one of the most obvious dictates of the policy of concentration and economy is to have as much freight handled at one port as possible. At the present time an understanding among three great trunk lines in the eastern section—the Pennsylvania, the New York Central and the Boston & Maine—has preserved a certain balance of export and import business among the three principal ports. With the Morgan interests in control of most of the lines calling at other ports than New York and working in close agreement with practically all the other lines, it remains to be seen whether the Morgan railroads will be allowed to scatter freight up and down the coast for the benefit of local interests only. As for the permanence of the present transatlantic service from other ports it is argued that the service from each port will be, for obvious business reasons, adjusted to the needs of that port's own manufacturing or agricultural territory, leaving all export freight from the interior to be collected at one port, from which ships can always be assured full cargoes."

Any development of the export trade from the port of New York must have a corresponding effect upon the business of the lakes. The great lakes route is the natural highway for products of the west to reach New York for export. The development of shipping in the southern ports has had a correspondingly depressing effect upon through lake trade.

Dr. J. C. Ayer of New York city has recently purchased the cruising yacht Iroquois through the office of Frank N. Tandy of Boston. This boat was owned by Mr. R. K. Thorndike who used her for sailing at Bar Harbor. Dr. Ayer will use the Iroquois for cruising on Long Island sound.

THE SYNDICATE IDEA.

ITS REMARKABLE GROWTH IN THIS COUNTRY DURING THE PAST DECADE—THE BANK OF ENGLAND IS THE OUTGROWTH OF A SYNDICATE.

The growth of the syndicate idea in the floating of great industrial combinations is well portrayed in the following article from the New York Times. This method has been employed in the United States only during the past ten years, though it has been a favorite method in England for many years. Indeed the bank of England was practically a syndicate in its original conception.

Criticism cabled over from London of the compensation to be awarded to the syndicate which is underwriting the securities of the new shipping combine has excited interest in the history of the development of these syndicates, and the extent of their profits in this country. The present criticism is over the fact that the underwriting syndicate for this consolidation is to receive a bonus of $25,000,000 in common stock and $2,500,000 preferred. In spite of the extraordinary attention which has been attracted to this arrangement, it is pointed out by a prominent financial interest in Wall street that this is not so large payment as was received by the underwriters of the Steel Corporation. The shipping combination syndicate guarantees the sale of $50,000,000 bonds and about $120,000,000 in stock. This syndicate has been called upon for $25,000,000 of its cash subscription. Interests connected with the new scheme admit, however, that most of the bonds of the new company have already been subscribed for outside of the syndicate. All that remains to be done, therefore, is to float the issue of $120,000,000 of stock. It is said that if the syndicate itself were to buy these bonds, its profit would amount to about 55 per cent., which would be reduced to some 30 per cent. by the sale of the shares of stock at less than par value. It has been figured by responsible persons that the profits of the syndicate will amount to about one-half of the face value of the securities with which payment will be made to them, or some $13,000,000 or $14,000,000. Of this amount it is understood that J. P. Morgan & Co. will receive about $1.400,000 for managing the affair. This is considered a low estimate in Wall street.

Since 1890 underwriting syndicates have had remarkable development in this country. It has made possible the formation of companies with hundreds of millions of dollars capital; it has brought great banking houses into harmonious working agreements; it has brought American and foreign financial institutions into close co-operation, and it has fixed a very snug berth for the stock market manipulator—the man who acts as a sort of selling agent for underwriting syndicates. Syndicates are paid usually in the securities of the companies they underwrite. The stock market operator turns those securities into cash. This is why underwriting syndicates often remain in existence long after the apparent use for them has expired. Little is known outside of Wall street banking houses of just what the part is which is played by these syndicates. The most remarkable illustration of the working of such a syndicate is found in that which underwrote the Steel Corporation securities, and its operations will serve as a type of those of all the rest.

WHY WALL STREET WANTED THE STEEL CORPORATION.

Attention was called by Prof. E. S. Meade of the University of Pennsylvania, in a lecture before the New York University last week, to the fact that the formation of the Steel Corporation was brought about because New York banking houses still held a considerable amount of securities they had received as commissions for forming the smaller steel trusts—American Steel & Wire, Federal Steel, Steel Hoop, etc. There are six such corporations, aside from the Carnegie company. These combinations had been organized on the height of the great demand for iron and steel products in the years 1898 and 1899. Many of them had been capitalized up to their fullest earning capacity, independent of any material assets. They had unified a vast number of miscellaneous companies, and many difficulties had been encountered by the bankers who guaranteed their securities. Messrs. J. P. Morgan & Co., for example, had underwritten the steel tube company. That is to say, the Morgan company had agreed to furnish the necessary capital for purchasing the securities of the subsidiary companies and to provide working capital for the tube company when fully organized. In return for this cash which was supplied, the Morgan company received a large amount of stocks in the new corporation. Likewise, a large amount of securities of the American Steel & Wire, Steel Hoop, Tin Plate, and other companies passed into the hands of Wall street bankers. So long as there was a great demand for steel products, says Prof. Meade, and the makers of the finished product bought their raw materials from Mr. Carnegie, there was no trouble. The bankers were gradually selling their stocks through operators, and there was no complaint from any source. In 1900 the market for the finished product fell off some, however, and the different steel interests proposed producing their own raw materials. Mr. Carnegie threatened that if this was done he would build large producing plants and compete with the product companies. This action on his part would have meant ruin for the other companies and the total loss of the holdings of the Wall street bankers. To save their commissions, consequently, it was deemed necessary to buy out Mr. Carnegie and consolidate all of the steel-producing companies.

To effect this consolidation, it was necessary to purchase securieties amounting to about $1,000,000,000. Working capital had to be supplied to the new holding company, and cash had to be furnished for purchasing such of the necessary securities as must be bought in the open market. Messrs. J. P. Morgan & Co. therefore organized a syndicate which agreed to supply $200,000,000 in cash upon its being demanded by the managers of the undertaking. It was obviously impossible for any one banking house to undertake to supply such a sum of money. Even had it been possible, the risk of loss would have been too great. Hence, while J. P. Morgan & Co. themselves subscribed a large amount of the sum, the major portion of it was distributed among a number of banking establishments. The first and only call made for payment was for $25,000,000. This sum was paid to the Steel Corporation, to be used when necessary to secure the securities of subsidiary corporations and to supply working capital. In return for this payment, the syndicate was paid 649,987 shares of the new common and an equal number of shares of the new preferred stock (market value about $84,000,000). It was expected that this payment of $25,000,000 would be returned, but the syndicate guaranteed the flotation of the entire issue of securities—some $1,410,000,000 in all. It was never expected that the syndicate would be called upon to supply the total amount of money subscribed. In fact, such a call would have been decidedly embarrassing. Here is where the value of the guarantee came in, however. With such a guarantee as this, and with such a payment of stocks to operate with, the syndicate managers could go to trust companies and borrow money upon the securities received as commissions. With this cash the remainder of the deal could be financed. It could not have been possible without such guarantee. The process is to gradually pay off the loans at the trust companies, sell the securities, and send dividends to the members of the syndicate. In the case of the Steel Corporation, the $25,000,000 was returned within a short time, and it is expected that the total dividends upon the syndicate's subscriptions will amount to about $40,000,000. This will be 20 per cent. of the amount subscribed—about 160 per cent. of the amount paid in.

No such profit as this was ever before made by such a transaction in this country. It was explained by the managers, however, that the profit was not abnormal when the risk undertaken was considered. The risk might have been said theoretically to be epitomized as follows: The possibility that all of the subsidiary companies might not be secured, the possibility of panic conditions in the market, which would render the sale of the commission securities difficult—the possibility of impediments in the flotation of the company's securities. When it is realized that the capitalization of the Steel Corporation was about $400,000,000 in excess of the aggregate capitalizations of the companies consolidated, the element of risk in this last possibility may be seen.

This, then, is the method of operation of the syndicate: Its theoretical purpose is to supply such cash as may be needed; its practical purpose is to furnish the necessary credit. When the necessities of the case make it essential to provide cash and credit, the scheme is not considered so successful. The profit of the syndicate is reckoned as a commission upon its liability, not upon the amount of cash paid in. It is an application of the same principle as that upon which bankers make loans. They agree to furnish money. As a matter of fact, they usually furnish a book credit, and upon that they charge interest. As in the case of syndicates, the collateral is very much more insecure, the interest charges are impliedly very much larger, although there is the possibility of there being no gain at all.

THE BEGINNING OF THE SYNDICATE IDEA.

Syndicates were first organized in England in about the year 1840, and in floating all large corporations and joint stock companies since that time, they have been extensively employed. The bank of England itself, in its original organization, was planned upon very much the same lines as a bankers' syndicate of today. It was chartered primarily to guarantee a governmental loan in the latter part of the seventeenth century. The same plan has been utilized in nearly all large flotations of stock in England since then. Strangely enough, this method of floating securities was not brought over to this country until 1890. Before that year, issues of capital had been floated by direct subscription. There had not existed the need for a syndicate to provide working capital or to buy up the securities of companies which it was desired to incorporate in a combination. The trust certificate plan had served the purposes now served by the great New Jersey trusts. After 1890, when the trust certificate plan had been dislodged by the courts, it became necessary to combine corporations by purchasing their shares. This created the necessity for enormous capitalizations, and for great sums of working capital to acquire control of subsidiary corporations. The syndicate plan very naturally became ingrafted upon the financial machinery of this country.

Casuists figure upon other possibilities of the syndicate suggested by the proposed plan to convert 200,000,000 shares of the preferred stock of the United States Steel Corporation into bonds, and make an additional issue of $50,000,000 in bonds. An underwriting syndicate has been formed to guarantee this deal, and it is to be paid some $10,000,000. J. P. Morgan & Co., of course, get merely a commission, as managers, in addition to the profit upon the sum they subscribe to the total guarantee. Owing to the risk involved in these deals it is always considered wisest to distribute the subscriptions as widely as possible.

It is said that the organizers of the Steel Corporation have as yet not been able to sell their holdings of stock in the market. They still hold control, however, of the property, and can vote any action that may be desired. It is understood that it is this speculative interest which is principally concerned with the conversion. Two possibilities lay in the conversion, it is pointed out. The first of these is that a 5 per cent. bond will be easier to sell in the market than a speculative stock, especially as the $300,000,000 of steel first mortgage bonds are greatly inferior to the actual value of the material assets of the trust. Secondly, the control of $126,000,000 of the new second mortgage bonds will give their holders the power to force a foreclosure and reorganization of the company in case of a failure to meet fixed charges.

In case a large number of independent companies should grow out of the promise of profits now afforded by the great prosperity of the Steel Corporation, and the gains of the trust should thereby be curtailed to the extent of rendering the corporation unable to pay the interest on the second mortgage bonds, a foreclosure could be brought about. The competing concerns could then be brought into the fold, the company entirely reorganized, new capital floated, and more profits secured for banking syndicates. It is not argued that this is what promises to be the case with the Steel Corporation, but that the possibilities of profit to underwriting syndicates have a conspicuous illustration in this organization.

Syndicates as a rule feel that they should make about 20 per cent. on the amount of their subscriptions to these underwriting agreements. The amount of cash called in is ordinarily about 10 per cent., though this sometimes rises to 20, 30, and 40 per cent. Syndicates have been known as recently as 1890 to be in serious straits, and have to supply the full amount subscribed, and then be in doubt about a dividend. This does not happen often, however, as the managers of syndicates are usually houses of such standing that the success of the scheme is practically guaranteed before it is ever launched.

Outside of the steel syndicate, the most profitable underwriting deal of recent years was that of the reorganization of the Union Pacific Railroad Co. Its profits were never publicly stated, but the circular containing the reorganization plan stated that the syndicate had pledged itself

to supply $10,000,000, if needed. It was to receive $6,000,000 in preferred shares, of which Kuhn, Loeb & Co., as bankers, were to receive $1,000,000. The syndicate was never called upon to pay much cash, and Union Pacific shares are now selling at around 102 and 103.

The syndicate which underwrote the reorganization of the Erie Railroad received $15,000,000 in new prior lien 4 per cent. bonds, and contracted to furnish up to $14,000,000 in cash to the new company. In addition, the firm of J. P. Morgan & Co., as depositaries of the old securities which were to be exchanged for the new, were to receive $500,000 in cash as compensation.

Last October the Mexican National Railroad's affairs were readjusted. The syndicate which carried the scheme through bought for $12,967,000 cash the following securieties, to which are added their present quotations: Prior lien 4½ per cent. bonds, $9,221,000 (par value), present quotation 102¾; first consolidated 4s, $3,595,312 par value, quotation 81⅛, and preferred stock, $2,400,000 par value, present quotation 41.

In reorganizations the underwriting syndicates always assume responsibility for assessments not met by shareholders. This was a prominent feature of the Atchison reorganization plan which was made public on June 21, 1894. The reorganization committee, in a circular to the stockholders outlining the plan of rehabilitation, said: "Syndicates may be formed on reasonable and usual terms to furnish the money needed in case of foreclosure to pay the non-assessments, pay bondholders their shares of the proceeds of the sale, and such syndicates by such payments and to the extent thereof shall be entitled to and shall represent and succeed to all the rights that the bondholders receiving such payments would have been entitled to if they had assented to this plan and deposited their bonds."

The assessments on the common stock of the Atchison amounted to $10,000,000 when the company was reorganized, and a syndicate was organized in London and this country to supply the cash. This syndicate was to guarantee the exchange and flotation of the following securities: $129,000,000 general mortgage bonds, $87,000,000 second mortgage bonds, $12,000,000 prior lien bonds, and $102,000,000 of common stock. Just what sum was cleared by the syndicate in this reorganization was never announced, but the immense responsibility assumed justifies the statement that the profit was very large, $10,000,000 or $12,000,000 being regarded as a conservative estimate.

This matter of guaranteeing assessments was a very important one also in the reorganization of the Richmond & West Point Terminal Co.—one of J. P. Morgan's great accomplishments. In the Richmond Terminal Co.—which was a holding company, interested in the Richmond and Danville, East Tennessee, Virginia & Georgia, and other railroad properties in the south—were such interests as Gen. Samuel Thomas, Calvin S. Brice, Patrick Calhoun, John H. Inman, and Alfred Sully. In the general crash of the 1893 panic period this company went to pieces, and J. P. Morgan & Co. reorganized the properties into the present prosperous Southern Railroad Co. The commission of the syndicate which floated the securities of this new company was in stock at that time valued at $7 a share, but is now selling at $39. It is supposed that the syndicate sold its holdings at about $25—thus bringing into its coffers a very comfortable number of millions of dollars upon its guarantee of some $10,000,000 or $15,000,000 of cash.

MORGAN'S FIRST GREAT ACHIEVEMENT.

The first great achievement of J. P. Morgan was his first reorganization of the Reading railroad. It had been controlled for years by Franklin Gowen, who had done many spectacular things, such as floating the very elusive "deferred income bond." There was a contest between the Gowen interests and Drexel, Morgan & Co., which resulted in a readjustment of the company's affairs. Mr. Morgan is conceded in Wall street to have made very large commissions by this deal. The road was turned over to Austin Corbin, and very large net earnings were reported. A. A. McLeod attempted to combine the coal and carrying industries on the Reading lines, and the property went to smash. Following the panic of 1893, Mr. Morgan again reorganized the road, reaping large commissions once again.

The first of the large industrial companies to be reorganized was the sugar trust. Its reorganization was forced by the fact that its charter under the laws of the state of New York had not been legally drawn, and it was forced to take refuge in New Jersey. The cordage trust was the first of the big industrials to be really reorganized after the modern fashion. Its troubles furnished one of the most picturesque incidents of the panic of 1893. Mr. Morgan was called into consultation in this readjustment, but the company has had two reorganizations since its first disintegration.

In the formation of many large combinations, the underwriting agreement is private, and only the managers appear as financing the deal. In the Northern Securities combination, for example, no syndicate managers appeared at all. Control of the stocks to be consolidated was already secured, and that any consolidation was to be effected was ostensibly not one of the purposes of the company's formation. Shares of the Northern Pacific and Great Northern railroads were deposited directly with the Northern Securities Co., without the intervention of bankers, and J. P. Morgan & Co. themselves secured the transfer of some $78,000,000 of Northern Pacific stock from the Union Pacific interests to the Northern Securities Co. without one dollar of commission. Such was the testimony of Mr. Morgan before the United States commission in the Peter Power hearing. Often a combination is brought about by inside interests entirely, bankers appearing merely as depositaries. This was the method used in the organization of the glucose trust, of Corn Products Co. The capitalization was $80,000,000, but no underwriting syndicate appeared to guarantee the flotation of the securities. All of this was done by "inside interests," who, of course, received a large commission.

To catalogue the profits which have been made by underwriting syndicates in Wall street in recent years would be to make a list of all the important reorganizations and combinations which have been effected, record the amount of money guaranteed by the underwriting syndicates, and take 20 per cent. of the total sum. These syndicates have amounted to very much more within the last three years than ever before because of the custom which had grown up of not calling for more than a small percentage of the total. Previous to 1898 the total subscription was usually called for, but up to that year the $200,000,000 corporation was almost an entire stranger. The profits to be derived from underwriting have grown to such an extent that many banks of considerable reputation in Wall street rely almost entirely upon such profits for their incomes, letting the conventional banking business entirely alone. Sometimes the profits are not received in cash, but in bonds or stocks, and they have to be disposed of. This explains many sudden offerings of securities in the market. If all the members of the syndicate receiving profit in such manner as this were to attempt to realize their cash values in the market there would be a general slaughter. It becomes necessary, therefore, to employ the skilled market operator. A well-known operator has been confessedly marketing the holdings of the steel underwriters for the year past, but the market so far has not responded as it had been hoped would be the case.

It is a very much simpler matter when syndicates undertake to guarantee the flotation of the single issue of bonds or stocks, such as the issue of $30,000,000 of Atchison debentures several months ago and of $10,000,000 of stock of the American Telephone & Telegraph Co. a few weeks later. Such issues are turned over to syndicates, because the recommendation of certain bankers to the public of the gilt-edged quality of a security is worth to the corporation issuing the security very much more than the 2½ or greater per cent. paid as commission for the underwriting commitment. As such issues by strong corporations are ordinarily so easy to float, the commissions paid are compensatingly small.

Following the custom understood to have been inaugurated by J. P. Morgan & Co., houses which form syndicates and act as managers now usually subtract a fifth of the net profits as compensation for their special services. A recent heavy bond issue by a very large system of railroads was made on a 5 per cent. basis to the railroad, with the payment in addition to the bankers of a flat $750,000, the bankers deciding on the selling price to the public, which, in this instance, allowed a commission of 1 per cent.

A well-known corporation lawyer in Wall street was asked if the tremendous profits made by underwriting syndicates were not, in effect, abnormal tributes levied upon the public, if a return to the old system of direct subscription to the corporations themselves might not be quite as good in the end. To this question the lawyer replied: "These syndicates are absolutely necessary. Without them the great corporations with tremendous capitalizations could not be organized. When such enterprises are launched, it is absolutely necessary to have money to guarantee that they shall be started without embarrassment. The money must be had at once. The syndicate supplies it, and sells the securities as there appears to be a demand in the market for them. If the corporation had to wait for such demand, it might never get on its feet at all."

TERMINAL IMPROVEMENTS ON LAKE SUPERIOR.

Duluth, Minn., May 7.—The large dredge outfit of the estate of C. S. Barker of West Superior has been sold to the new Lake Superior Dredging & Contracting Co. of Duluth. The Barker plant includes seven dredges, five tugs and attendant scows. The Lake Superior Dredging & Contracting Co. was organized to take over the E. T. Williams plant, consisting of four modern dredges, tugs and scows, and now controls all the dredge apparatus at the head of the lakes excepting the three large and modern machines of the Duluth Dredge & Dock Co. The chief work of the large company for the next two or three years will consist of the government harbor contract at Duluth-Superior, on which the Barker and Williams plants have been engaged the past four seasons. The Barker dredges are also doing work on the west side of Rice's point, Duluth, for the Northern Pacific road. Aside from this there is little work in sight at the head of the lakes.

One of the three machines of the other company is working at Port Arthur for the Canadian government and will probably be employed there for a long time. The other two, including the great dredge Napoleon, will be employed in the Sault river this year on government work. There is a probability of considerable private work at the head of Lake Superior in 1903 and later; in fact much will have to be done to keep pace with probable requirements of commerce.

At Port Arthur and Fort William, Ont., the government, the Canadian Pacific and the Canadian Northern will have a great deal of work along the harbor front for a long time. The Canadian Pacific is to add 3,000,000 bushels to its grain storage capacity on the Kaministiquia river at Fort William, and contracts for the work have been given to C. F. Haglin of Minneapolis. The road will also build a concrete storage, in eight tanks of 62,500 bushels each, in connection with the wheat cleaning and drying elevator at Port Arthur. All this will give a capacity at the two points, for the Canadian Pacific, amounting to 9,000,000 bushels. The Canadian Northern road has erected at Port Arthur an elevator of 1,500,000 bushels capacity and began shipping therefrom the past week. It will add to this during the coming season 2,000,000 bushels storage, so that all told there is in sight for the Canadian head of the lakes 12,500,000 bushels grain storage. If the wheat area of the Canadian northwest grows, as is fully expected, this will be increased materially in a very few years. All this and other plans of the Canadian Northern for Port Arthur will require immense terminal, harbor and dredging improvements along the water front.

A deputation representing the steel ship builders of Canada interviewed the premier at Ottawa this week and asked for a bonus of $4 per ton on steel vessels built in Canada, such bonus to be computed on the total gross registered tonnage. They also asked that foreign-built ships be not allowed to register in Canada and that no coasting privileges be allowed to foreign vessels in Canadian waters which are not extended to Canadian vessels in foreign waters; that the present subsidy of 2 per cent. allowed on the cost of constructing dry docks be increased to 3 per cent. The delegation consisted of Messrs. Thomas and John Long, Collingwood; F. P. Polson, R. Bertram and A. Angstrom, Toronto; George Robertson, St. John, N. B., and George Crowe, Halifax.

The Kelley-Spear Co., Bath, Me., launched last week the tug John G. Chandler for the Commercial Towboat Co. of Boston. The tug is 102 ft. in length, 20 ft. in width and 11 ft. 4 in. deep.

Moran Bros. Co., Seattle, Wash., will lay the keel of the battleship Nebraska on July 4.

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If we would offer advice to the public in general it would be a word of caution against the average editorial in the daily newspapers. The average editorial writer regards his column as so much space to be filled and he fills it with the topics most convenient to his hand. It is rarely that he speaks from personal conviction; and it is rarer still that he speaks from actual knowledge. Therefore it often happens that the editorial is based upon misinformation and is projected to deceive. We have been fairly stunned by the bombardment which the shipping bill has received—and all because Mr. Morgan has succeeded in combining the White Star line with other steamship interests. That is a business venture pure and simple—an ordinary enterprise of capital. It has not added a ship to the American merchant marine, and the chances are that it never will. All the ships, with the exception of two, in this great combination of steamships were built abroad. These two were built in this country in order that two more ships which the American line had purchased abroad might be permitted to fly the American flag. That is the full extent and substance of the American merchant marine in this latest combination. The White Star line is still British, flying the British ensign and undoubtedly reserved by the British admiralty for times of war. This combination does not pledge a penny to an American ship yard. It is almost in the natural order of things that any additions to the existing fleet will be built in British yards. These men have gone into the combination merely as a commercial venture, and they will undoubtedly build their new ships where they can build them cheapest. There is no indication that the combination intends to apply for American register for these vessels.

That the merger has quite effectually put a quietus upon the shipping bill we are ready to admit. It has killed it because the effect of the merger is generally misunderstood. To read the newspapers and the interviews with congressmen one would think that the country has sprung like Jove, full armed, into an American merchant marine. Ask any ship builder what he thinks of the combination and he will tell you frankly enough that it has an ill look for the American ship yard. Below will be found a few expressions from republican members of the house, which shows how the merger has affected them. They are merely looking at the surface of things.

Mr. Crumpacker of Indiana: "The tendency toward consolidation on the part of the great international steamship lines will defeat the object of the pending ship subsidy bill, and ought to defeat the bill itself. The country will not consent to the payment of large subsidies to steamship companies that have become part of ocean transportation combinations organized for the purpose of keeping up ocean freight rates."

Mr. Davidson of Wisconsin: "I do not wish to object to the principle of subsidy as a phase of protection, but I greatly doubt if the shipping business can be built up that way. I do not think that any bill which has been before congress for the upbuilding of the merchant marine would accomplish the desired purpose. The pending bill appears to me to fall far short of it. All the subsidy bills that have lately been before congress give their benefit to ships that do not need it, and that are already doing their work, instead of to new lines that might be started thereby. They give very little to tramps and other freighting vessels. They base their reward upon tonnage and speed, so that vessels could sail in ballast and draw subsidy. The recent steamship merger takes in the vessels that would get most of the subsidy."

Mr. Perkins of New York: "I do not think the bill will be brought up at the present session, nor do I believe it could pass now. The name of 'subsidy' is unpopular, and there is evidently much opposition to the pending bill. No one could object to the bill if its proposed object would be insured by its enactment. If bills were considered only by their titles every bill would be a good bill; but the question is whether this sort of legislation would result in the development of American commerce. There is no doubt that it would benefit some large interests. If congress could be convinced that the results claimed would be brought about the bill would be passed. There are, however, many members who view such legislation with a great deal of distrust."

Mr. Barney of Wisconsin: "I am opposed to the pending subsidy bill because, as it is framed, it is in the interest of large ship owners and ship builders, and not in the interest of the smaller ones. While I favor in a general way the promotion of foreign commerce, I am not in favor of protecting large corporations by giving them an advantage over smaller ones."

Samuel W. Smith of Michigan: "I opposed the subsidy bill in the last congress, but have not yet examined the details of the pending bill."

Henry C. Smith of Michigan: "I do not believe we ought to pay a subsidy for carrying wind, and that is what the pending bill proposes to do. The subsidy, as proposed, applies as much to vessels when empty as when they are carrying a full load."

Mr. Eddy of Minnesota: "I believe in a subsidy because it specifically applies to American seamen the principle of protection that has been so successfully applied on land. I want a bill, however, so framed that every ship made in the United States and flying the American flag, that carries a pound of American freight or a single passenger, will get its fair proportion of benefit. I will not support a bill under any circumstances or conditions that favors any special class of ships."

Mr. Curtis of Kansas: "I was opposed to the bill as presented to the last congress. I have not had time to carefully examine the bill as it now stands, but I understand that the objections to the old bill have not been entirely removed in the new. If this shall appear to be true when the bill comes up, I shall oppose it, and in so doing I think I shall represent the sentiment of Kansas."

Mr. Hepburn of Iowa: "I am willing to vote for a subsidy bill under certain conditions, but I am not willing to vote extravagant appropriations for that purpose. I want the subsidy limited to vessels adapted to cargoes rather than passengers. I do not look upon the pending senate bill as accomplishing what I would want in a subsidy bill."

Mr. Woods of California: "I am opposed to the pending ship subsidy bill, first, because it does not subsidize in equitable proportions the proper kind of ships; the slow ships are in need of a subsidy—not the greyhounds of the sea; the latter can pay good dividends without any subsidy. Second, I am opposed to subsidizing any ships manned substantially by foreign sailors; this bill gives subsidy to a number of ships that employ Chinese labor."

Mr. Haugen of Iowa: "I have not time to discuss the subsidy bill in detail, but I feel free to say that I am opposed to it as it is now constituted, opposed to it as it is likely to come up at this session if it should come up at all, and I am inclined, at this time, to oppose it in any shape."

Rear Admiral William T. Sampson passed away on Tuesday of this week. He had rendered meritorious service during the war with Spain and his death was undoubtedly hastened by events which grew out of it. The last three years of his life were sad and tragic. While he was the responsible head of the West Indian campaign which culminated in the battle of Santiago he was, in the minds of a great many, deprived of all credit for it. Admiral Sampson felt keenly the injustice which was being done to him and it unquestionably embittered the last years of his life. We are satisfied, however, that the judgment of the future will be in his favor. Rear Admiral Sampson was born at Palmyra, N. Y., Feb. 9, 1840. He graduated from the naval academy at Annapolis at the head of his class in 1861 and shortly afterward was attached to the frigate Potomac. By good conduct and close application to duty he won the lieutenant's commission which was conferred July 16, 1862. In 1864 he became executive officer of the Patapsco. While protecting the packet boats which were dredging for mines and torpedoes in Charlestown harbor, Lieut. Sampson's ship was blown up by a torpedo, but he escaped uninjured. In 1889 he was made captain. In the educational and scientific departments of the service Admiral Sampson rendered excellent service, being at various times instructor in natural philosophy, head of the department of physics and chemistry, assistant superintendent of the naval observatory and superintendent of the naval academy. He was chief of the bureau of ordnance in 1893-1897 and took command of the North Atlantic squadron in May, 1898. He was retired Feb. 9, 1902. He was a brave and brilliant officer.

A dispatch from Hamburg says that the North German Lloyd steamship Kaiser Friedrich has been sold to the Morgan syndicate for 6,000,000 marks. Of course this is one of the many rumors connected with the steamship combination that can not be verified. The Kaiser Friedrich was built in the yards of Schichau of Dantzic in 1897 for the North German Lloyd line. Schichau has fame as a maker of swift torpedo boats, and he applied some of the principles of these craft in the construction of the Kaiser Friedrich. She was designed to beat the Kaiser Wilhelm der Grosse, then the swiftest merchantman afloat, by a fraction of a knot. In the contract with the North German Lloyd line Schichau guaranteed that the Kaiser Friedrich would average more than 22 knots. She turned out a failure on this score, being unable to maintain an average of more than 19 knots from port to port. She was turned back to her maker by the North German Lloyd line. Then the Hamburg-American line made a fruitless effort to get speed out of her, using her about a year. She cost her builder about $3,000,000.

Some of the New York newspapers are surprised by the report that American railroads are to be the principal owners in the big Atlantic steamship combination. Of course the railroads will control, or at least be in very close touch with the steamship combination. The Pennsylvania company has all along been closely allied to the International Navigation Co., and it is not at all probable that Mr. Morgan would attempt a merger of the Atlantic lines without the co-operation of other large railway interests. This will be clear in a short time. The plans of the steamship combination undoubtedly involve relations with several large American railway interests that will insure a control of rates from the principal interior points of this country to leading European centers.

It is reported from San Francisco that all the steam vessels of the American-Hawaiian Steamship Co. are to have their furnaces equipped for the use of oil as fuel. It is said that a tank steamer is to be stationed in the Straits of Magellan, from which supplies will be obtained by steamers of the line as they pass that way. This tanker will have oil from the Texas field. Vessels passing from the Atlantic to the Pacific will be provided before starting with sufficient oil from eastern supplies to carry them to the Straits of Magellan and those leaving San Francisco for New York will draw upon the California oil wells. The story does not seem like a very plausible one. Probably it is true.

AN INTERESTING FORGING.

The accompanying illustration shows a rudder forging recently made by the Fore River Ship & Engine Co., Quincy, Mass., for the British steamship Nyassa, undergoing repairs at the works of Townsend & Downey Ship Building & Repair Co., Shooters' Island, N. Y. The forging is of wrought iron and weighs 9,620 lbs. The total height is 36 ft. 2 in., breadth 6 ft. 8 in., diameter of stock 8 in.

The order called for rudder frame forging complete, with rudder stock turned, gudgeons bored and pintles in place. The job was finished in three weeks.

NEW BOND ISSUE.

It was officially announced, following a meeting of the board of directors of the United States Steel Corporation in New York on Tuesday last, that the commission to be paid to the syndicate underwriting the new issue of bonds would be on the bonds actually placed through the syndicate. There has been a good deal of uncertainty on this point, as the circular issued some time ago did not make it plain. It has been wrongly assumed in some quarters that the commission would be paid on the entire issue contemplated, in which case it would amount to $10,000,000. Some have thought that it would be paid merely on the $50,000,000 of the issue which is to be paid for in cash. But according to this announcement from the directors the amount of the commission to be paid will depend on the amount of bonds placed by the syndicate. It has guaranteed to take $100,000,000, so that the minimum commission will probably be $4,000,000. The maximum of $10,000,000 would only be received in the event that not any of the outside holders of preferred stock avail themselves of the privilege of converting 40 per cent. of their holdings into bonds, paying an amount in cash equal to 10 per cent. of their holdings in preferred stock. Of the whole commission of 4 per cent. on the amount of bonds placed, one-fifth goes to the management of the underwriting syndicate.

DEVELOPING THE UPPER PENINSULA OF MICHIGAN.

The Cleveland-Cliffs Iron Co. and some Kalamazoo capitalists have organized the Munising Paper Co., Ltd., with a capital of $1,000,000, and will begin at once the erection of a plant at Munising for the manufacture of pulp and paper. The new company controls the hemlock on 180,000 acres of land in the upper peninsula of Michigan. The officers of the new company are: William G. Mather, Cleveland, president; Frank H. Milham, Kalamazoo, secretary; H. H. Everard, Kalamazoo, treasurer. Mr. W. G. Mather, president of the Cleveland-Cliffs Iron Co., who has just returned from the peninsula, says that plans and specifications are now being drawn for the buildings and that the plant will be in operation in the fall. The plant contemplates an initial expenditure for buildings and machinery of $500,000, but it will be built with a view to enlargement. It will be so constructed as to permit of doubling its capacity, as it is expected that the business will develop to that extent within two or three years. It is estimated that the supply of hemlock on the lands will last for thirty years. Mr. Mather adds that this is only one of the enterprises in contemplation for the upper peninsula. While the hardwood resources of the lower peninsula are scarce and consequently high, those of the upper peninsula are fairly abundant and consequently cheap. Many inquiries have been received from men anxious to turn the hardwoods into handles, spools, dishes and other articles of commerce for which there is a great demand, and it is more than probable that in the near future Mr. Mather will further the introduction of such enterprises there.

FOREIGNERS GAINING IN FRENCH SHIPPING TRADE.

According to the shipping statistics for the year 1901, just published by the authorities of the port of Marseilles, the total movement for the year, entries and departures combined, included 16,502 vessels (of which 11,346 were steamers), measuring 13,042,894 tons net, carrying 6,432,837 tons of cargo and 345,790 passengers, and manned by crews amounting altogether to 514,858 men. When compared with the statistics of the previous year, a diminution of 572 in the number of vessels is shown, but there is an increase of 746,640 register tons and of 81,828 tons of cargo. In the general maritime movement of the port last year, the steamers stand for 94 per cent. of the register tonnage and the sailers for only 6 per cent. The trade was about equally divided between the French flag and foreign flags, the national flag suffering a decrease of 2 per cent. last year, rival flags gaining by the same proportion. Out of the 50 per cent. of tonnage under foreign flags, the British flag is credited with 25 per cent. The increased tonnage last year (746,640 register tons) is divided as follows: 125,019 tons for the French flag and 621,621 tons for foreign flags, and in the last-named item the British flag stands for 182,434 tons. The quantity of cargo landed or shipped in the harbor last year was 149,932 tons more than in 1900, but the progress in this respect is entirely on the side of the foreigners—the increase under foreign flags amounted to 246,405 tons, while under the French flag there was a falling off to the extent of 96,473 tons. The annexed figures show the shares taken by the principal foreign flags in the inward and outward trade of the port combined: British, 3,264,998 tons (against 3,082,564 tons in 1900); Italian, 767,066 tons (against 700,268 tons); Spanish, 595,309 tons (against 568,512 tons); Greek, 423,286 tons (against 309,328 tons); Austro-Hungarian, 319,107 tons (against 276,751 tons); German, 310,048 tons (against 170,853 tons). The most striking feature in these figures is the great increase recorded for the German flag.

STEAM PIPE JOB AT SEA.

A rather interesting feat in marine engineering was accomplished by the engineer's staff of the Empress of India on her last voyage to the Orient. The casting of a large stop valve in the pipe conveying the steam from one of the boilers to the main pipe was found to be badly cracked. Steam was shut off, and the nature of the flaw examined. Its cause was apparent. The valve chamber was in the middle of the large pipe and the pipes on either side were stronger than the chamber. There being no expansion joints on the pipes the chamber cracked, as the temperature of the pipes increased and decreased. The problem was to remedy this. The pipe was parted at the flange joint, and from the inside of the chamber the work was performed. Holes were bored on the inside of the casting on either side of the crack, but they were not allowed to pierce the outer covering entirely. A half-moon shaped piece of metal was placed on the inside covering of the crack, bolts being put through and screwed in the holes made in the casting. This held the separating parts together and prevented the cracks growing wider. The pressure when the steam was turned on aided in keeping the protecting attachment in place. The pipe was joined again and the steam turned on. Though the Empress had been greatly delayed she made up the lost time and arrived on time.

SUCCESSFUL TEST OF WIRELESS TELEGRAPHY.

Lieut. Beecher, the naval expert in wireless telegraphy, has returned to Washington from his trip to the North Carolina sounds, where he inspected the weather bureau system of wireless telegraphy referred to at considerable length in the last issue of the Review. The system was found to work over a distance of fifty miles, with absolute accuracy, reliability and high speed. The latter is attained by abandoning the troublesome "coherer" which is an indispensable part of almost every other style of apparatus. The new plant is extremely compact and light and a very strong point in its favor is the remarkably small amount of battery power required to operate it as compared with other systems. This makes for low cost of maintenance. Although Lieut. Beecher has not yet made his formal report to Admiral Bradford, there is no doubt that he will recommend the installation of an experimental set of the weather bureau instruments in at least one naval vessel.

ITEMS OF GENERAL INTEREST.

Elwell S. Crosby has leased the old Reed Ship Yard, Bath, Me., and will build a four-masted schooner.

A dispatch from Berlin announces Emperor William has ordered Director Fritz of the government ship yard at Kiel to proceed to the United States to study the methods of American ship yards, particularly as regarding labor saving machinery.

A London dispatch announces that the Cunard Steamship Co. has decided to invite tenders for the construction of a contemplated new steamer for the passenger service between New York and Liverpool to exceed anything of the kind now afloat.

John H. Hanan of the New York Yacht Club has sold his imported steam yacht Taurus to Levi Z. Leiter, the father-in-law of the Viceroy of India. This fine vessel, which is better known in England than here, is 195 ft. long over all and 162 ft. on the waterline. She is of Scotch build, and was brought here by Mr. Hanan two seasons ago. The Taurus is not a fast boat, but she is comfortable, and suitable for easy cruising which is not tied to time.

Officers of the new Detroit Iron & Steel Co., which is to erect and operate a large blast furnace on Zug island near the city of Detroit, were elected at a meeting in Detroit a few days ago. D. R. Hanna, son of Senator Hanna and a member of the firm of M. A. Hanna & Co. of Cleveland, was elected president. C. C. Bolton, also a member of the firm of M. A. Hanna & Co. and who conducts the pig iron business of the firm, was elected vice-president. The secretary and treasurer is C. W. Baird of Detroit, and the general manager is Frank Richards, pig iron expert with M. A. Hanna & Co.

Consul General Frank Mason at Berlin writes to the state departmen that he thinks American builders of motor boats are losing fine business opportunity in neglecting to take part in the special international exposition of motor boats which is to be held at Wannsee-on-the-Havel, a few miles west of Berlin from June to September. There is evidence of a real and substantial demand for American motor boats in Germany, it is stated, and the committee in charge of the exposition promises every reasonable concession and assistance to facilitate a representative American display.

Designs for a great floating dry dock for the Fore River Ship & Engine Co. have been received from the London engineers, Clark & Standfield. This firm, it will be remembered, designed the United States floating dock at Algiers, La. It is the intention of the Fore River company to build the new dock at its own works. This dock will be 600 ft. long and 80 ft. in width between the altars. It will consist of a floor composed of pontoons or floats, carrying sides technically known as altars. On the pontoons will be placed keel blocks on which the vessel will rest. The new dock will be the first one to be completely equipped electrically. It will be driven by electric motors and power will be furnished by the central plant at Fore river.

Scott's Coast Pilot for 1902, the seventh edition, is out. The Marine Review has them for sale at $1.50 each.

EXPORTS DROP A BIT.

The United States maintains its position at the head of the world's exporting nations, despite the temporary reduction in the value of exports due to the shortage in corn available for exportation. The export figures for the nine months ending with March, as shown by the report of the treasury bureau of statistics, indicate a drop of $58,681,957 in the total value of exports. When it is considered, however, that the value of corn exported fell, owing to the shortage in the corn supply, $52,000,000 below that for the corresponding period of last year, and that cotton, owing solely to a decrease in price, fell $12,000,000 below the exports of the same period of last year, the entire decrease is more than accounted for. Corn exports fell from 146,000,000 bushels in the nine months of the fiscal year 1901 to 24,000,000 bushels in the nine months of 1902. Cotton exports increased 344,000,000 lbs., but owing to reduced prices, fell $12,000,000 in the total value exported. These two items—due in the case of corn to the shortage at home caused by the drouth of last year, and in cotton to the reduced prices in the markets of the world—more than account for the reduction of $59,000,000 in the total exports.

Notwithstanding the reduction of $59,000,000 in exports the grand total of domestic exports from the United States exceeds that of any other country. The figures of domestic exports for the nine months ending with March are: From the United States $1,062,432,158, United Kingdom $1,019,466,437. The fact that the commercial and fiscal years of the various countries differ in dates of termination renders a comparison by parallel years difficult, but the bureau of statistics in its statement of exports of various countries gives the monthly average of each during the year or the portion of the year which its latest figures cover. By this process it is practicable to show the relation of the various countries in the supply which they furnish to the markets of the world. This analysis shows that the average monthly exportation of domestic merchandise from the United States exceeds that of any other nation, that the United Kingdom stands second, Germany third, France fourth, Netherlands fifth and British India sixth in the list of exporting nations. On the other hand, the list of importing nations shows that the United Kingdom stands first, Germany second, France third, the United States fourth, Netherlands fifth and Belgium sixth in the relative demands upon the markets of the world.

One especially marked characteristic of the commerce of the United States, in comparison with that of other countries, is its large excess of exports over imports. Of the thirty countries whose average monthly imports and exports are shown by the bureau of statistics, only twelve show an excess of exports over imports. These twelve countries are Argentina, Brazil, Bulgaria, Canada, Chile, Egypt, British India, Mexico, Russia, Uruguay and the United States. The average monthly excess of exports over imports in the case of India amounts to about $9,000,000 and Russia also about $9,000,000; while that of the entire list of countries which show an excess of exports over imports (exclusive of the United States) amounts to but $38,000,000 per month, while from the United States alone the excess of exports over imports is $42,637,127 per month.

The following table shows the average monthly imports and exports of the principal countries of the world during that part of the fiscal year for which figures have been received by the bureau of statistics:

Countries.	Average monthly Imports.	Exports.
United States	$ 75,410,891	$118,048,018*
United Kingdom	212,208,056	113,274,048*
Germany	112,584,769	92,760,421
France	75,602,250	66,736,023
Netherlands	65,922,642	56,790,923
British India	22,433,972	31,790,036
Russia (Europe)	22,457,583	31,310,500
Belgium	35,236,846	28,866,753
Austria-Hungary	28,853,158	28,517,390
Italy	28,080,802	21,653,575
Canada	15,463,905	16,900,028
Brazil	7,214,116	13,835,945
Argentina	9,164,263	13,487,170
Switzerland	17,661,468	13,453,048
China	16,411,195	10,377,338
Spain	12,913,456	10,167,924
Japan	10,838,691	9,754,509
Egypt	5,679,401	8,869,927
Sweden	11,933,538	8,739,792
Mexico	4,615,254	5,457,624
Cuba	5,517,491	5,449,376
Chile	3,909,702	5,100,104
Cape of Good Hope	9,057,554	4,466,735
Roumania	3,489,856	4,503,340

*Domestic exports.

GROWTH OF THE AMERICAN NAVY.

Adding the two battleships, two armored cruisers and two gunboats, authorized by the present congress, there are now building altogether 138 vessels for the United States navy. The present navy may be said to have been created since 1883. In March, 1883, congress passed an act for the construction of three steel-protected cruisers with a speed equal to the average merchant vessel. The first one was named Chicago. Then came the Boston, the Atlanta and the Dolphin, so creditably done that they well nigh ruined John Roach, the famous ship builder. Having done so well in its first attempt, the forty-ninth congress, on the last day of its existence, March 3, 1885, authorized the construction of two more steel cruisers and two steel gunboats. This act gave the navy the Newark and the Charleston, the Yorktown and the Petrel, all now in commission save the ill-fated Charleston, lost on the rocks near the Philippines.

When Wm. C. Whitney became secretary of the navy he undertook the task of putting the service on a proper footing. Then followed a period of unusual liberality by congress for the upbuilding of the navy, leading to the construction of a large number of cruisers, gunboats, and at last a battleship was authorized. The first was the Maine, then came the Texas, both of which were seven years in building at government navy yards. This was an experience not to be ignored, and the government abandoned ship building at the navy yards, with the completion of the fine cruisers Raleigh and Cincinnati. Battleships, armored cruisers and protected cruisers followed in rapid succession until April, 1893, at the time of the grand review in New York, the navy was enabled to present a fleet of thirteen warships, every one nearly of a different class and displacement. This little fleet was in command of three rear-admirals. Compare this to the fleet commanded by Rear-Admiral Sampson, who had no less than fifty ships of all types under his command during the West Indies campaign. The fleet of 1893 did not equal the fighting strength of the squadron that smashed the Spanish in Manila bay under Admiral Dewey, and the whole lot could have been wiped out of existence by the British flagship Blake, flying the broad pennant of Vice-Admiral Sir John O. Hopkins, now a full admiral in the British service. From that time on the navy grew until it soon had five battleships and a respectable number of cruisers. Germany was being rapidly pushed for naval supremacy; Russia was just a peg ahead, and still the country continued to demand more vessels. It was not, however, until the Spanish war that the United States navy had assumed any real fighting condition, or could be regarded as competent to take the seas against any power perhaps except France and England. All this had been accomplished in about fifteen years. Fifteen years ago the floating strength did not amount to a dozen ships, and they were all wooden and antiquated. Since then the United States has made greater strides in naval progress in a given period than any world power, and has come out of a position scarcely ranking with the infant South American republics to that of fourth among the naval powers of the world.

It now has nine first-class battleships the equal of any of their class in the world, and besides a number building. It has also two first-class armored cruisers. There are in addition six large protected cruisers, two of which are the fleetest warships afloat, a second-class battleship and nearly a dozen protected cruisers. In all it has eleven vessels placed in the first rank and fifteen in the second rank. Of the third rank ships there are more than sixty, including cruisers of all types, gunboats, dispatch boats, colliers, repair ships and a large fleet of small vessels used in the Philippine service. These vessels range from 4,000 tons to 1,000 tons displacement. Of the fourth rate there are at least fifty vessels, comprising gunboats, small cruisers and repair ships. In addition there are five first-rate monitors, armed with the highest power modern ordnance.

It is, however, in the number and power of the various types of warships building that the greatest strength of the navy lies, for there are eight magnificent battleships now in course of construction, as compared to nine built and in commission. But those now building are perhaps superior to any ships afloat, not only in battery power, speed and steaming radius, but also in displacement and protection. Five of them are to have 19 knots, a speed greater than has been attained for a long period by any battleship in the world.

Next in point of fighting ability are six great armored cruisers of nearly 15,000 tons displacement, enormous horsepower, 22 knots speed and having protection and battery power almost equaling the 19-knot battleships. They, in fact, closely approximate battleships, and have the advantage of high speed and a large area of steaming radius. In fighting strength they will be the most remarkable vessels ever designed for the United States navy. Work is progressing rapidly on all.

Then come three large protected cruisers of 10,000 tons, larger by 3,000 tons than Admiral Dewey's flagship, the Olympia, and of greater speed and protection. There are also six fine 17-knot cruisers building. One of the protected cruisers takes the name of the Charleston. There are also a Maine, and four monitors of 12 knots speed under construction. The latter are single turret affairs and so well along that salt water should break over their bows before the year closes.

Fifteen 30-knot torpedo boat destroyers and twelve torpedo boats of from 24 to 28 knots are also building. In the designing of these boats the naval constructors appear to have made their first serious mistakes, and all of these ships will probably fail to make the speed required in their contracts. They are overweight, have too delicate machinery, and constantly break down on trials. All will be changed in some respects.

That newest type of craft, the submarine boat, ends the list of vessels. Seven are building, and if they prove a success may revolutionize warfare as the Monitor and Merrimac did in Hampton Roads.. They have their advocates, but are as strongly opposed. So was the Monitor until she proved her value. The upbuilding of the United States has progressed evenly, and ship for ship there are no superiors in the world.

SHIP YARD NOTES.

The steamship Tremont of the Boston Steamship Co.'s line was launched a few days ago at the works of the Maryland Steel Co., Sparrow's Point, Md. She is a sister ship of the Shawmut, which had a trial trip recently. Her length is 505 ft., width 58 ft. and depth 40 ft. The Tremont has a straight stem, elliptical stern, three steel decks, and a total water ballast capacity of 2,800 tons. She has a double bottom, extending her entire length, and six water-tight bulkheads. She will have two masts and one funnel, four boilers and triple-expansion engines.

A dispatch from Tacoma announces that the ship building industry continues to flourish and that many new vessels are under way at present. Crawford & Reid have received a contract to build a new tug for Capt. Thomas Grant of Seattle. The tug will be 75 ft. long, 18½ ft. beam, and 10 ft. deep. They also have an order for a gasoline tug for the Pacific Cold Storage Co. She will be 55 ft. long, 12 ft. beam, and 6 ft. deep. The Tacoma Ship Building Co. is at work upon two new barkentines and a fast steamer.

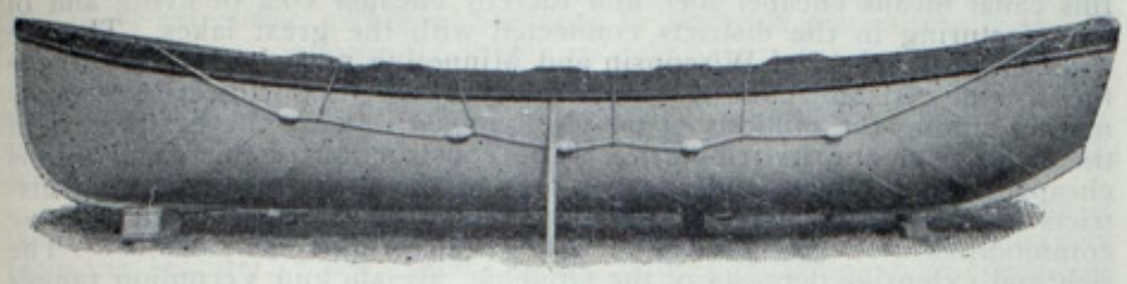
The Electric Launch Co., Bergen Point, N. Y., launched an electric ambulance launch last week, the gift of Mr. Isaac N. Seligman to St. John's Guild, New York. The launch is the first of its kind made. It is 38 ft. over all and is strongly constructed of oak and cedar.

The Tietjen & Lang Dry Dock Co. has received its new dry dock from Verplancks point on the Hudson and will have it in place at its yard shortly. The new dock is of the balance type and is about 150 ft. in length. It is intended for the use of heavy-draught ocean tugs.

A steamer to be known as the City of Haverhill was launched from Kehoe's ship yard, East Boston, Mass., last week for the Haverhill, Newburyport & Boston Steamship Co. Her dimensions are 134 ft. over all, 24 ft. beam and 11 ft. deep.

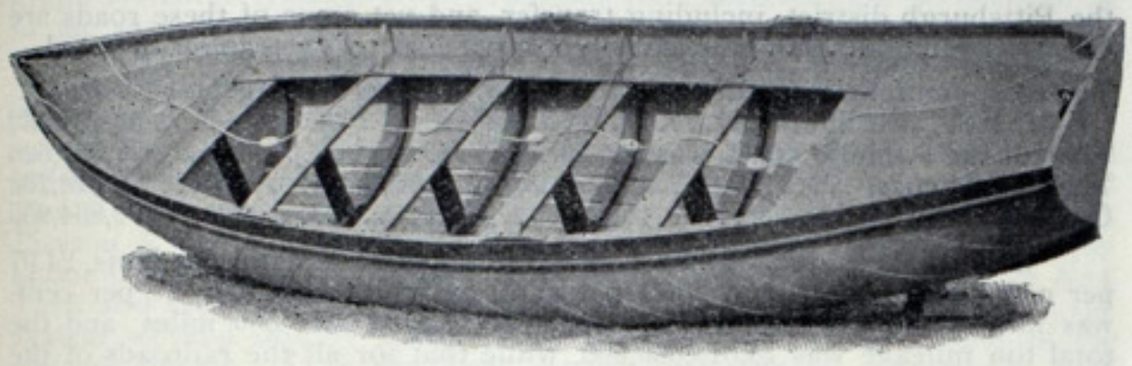
FRANK E. KIRBY'S NEW STEEL LIFE BOAT.

Mr. Frank E. Kirby of Detroit, who is best known as the designer of nearly all the large side-wheel passenger steamers of the lakes, has made arrangements for the building of a type of steel life boat, upon which he has been at work for a long time past, and which is the outgrowth of a special study of life boats in connection with the construction of large steamers for both passenger and freight service. The first boats of the



new type to be built (they are illustrated herewith) are to be used on the Eastern States and Western States, now nearing completion at Detroit for Detroit and Buffalo service, and which are the largest side-wheelers ever built on the lakes. The same type of boat will be used on the new excursion steamer Columbia, and on a large freight and passenger steamer as well as a freight steamer to be built for the Erie & Western Transit Co. (Anchor line) of Buffalo.

The present type of steel life boat has wooden keel, stem and stern posts, which rot quickly and are difficult to repair. The plating worked fore and aft is seldom in fair lines, and on account of the seams, and having no supporting frames inside, are very weak athwartship. The Kirby improved boat has an iron keel, stem and stern post in one piece, to which are welded the hooks for hoisting in. The plating is uniformly 15 in. wide, worked diagonally, double-riveted throughout, and even with indifferent workmanship it is impossible to make unfair seams. The seams



add considerably to the athwartship strength, which is further increased by heavy oak frames worked under each thwart and over the footlings which they hold in place. The footlings and frames can be removed, if necessary, for painting, as they are not fastened through the plating. They are held in place by shores set under the thwarts which have considerable spring. The air tanks will float the boat when she is full of water. The model of the boat is full as possible and she has a fair form. She is unstable in any position except on the bottom, and is, therefore, self-righting. No rudder is fitted as it is looked upon by the designer as a useless appendange for life boats.

CURRENTS OF THE PACIFIC OCEAN.

Prof. George Davidson, of the University of California, president of the Geographical Society of the Pacific, in a recent address on "The Currents and Climatology of the Pacific," said that the equatorial current in the Atlantic that moves westward into the Gulf of Mexico and sweeps northward as the gulf stream and curves across to warm the shores of Europe had its counterpart system in the Pacific in the equatorial current that starts about at Panama and moves westward to the Philippines, is deflected by those plateau-like barriers, turned northward along the Japanese coast and sweeps in a great upward curve back across the Pacific as the Japan stream to warm the northern shores of this country, and come down and deflect southwestward, to be redrawn into the equatorial current for another trip across to the Philippines. But, while the two big oceans have similar ocean currents, their shores are different. The Pacific, beginning at Cape Horn, extending up the coast to the Aleutian islands, over to China, Japan, the Philippines and ending way down at Tasmania, is bounded by a mountain wall close to the shore ranging roughly from 5,000 to 15,000 ft. in height and having no fewer than 350 active volcanoes in a distance of 20,000 miles.

Prof. Davidson also explained that the equatorial current moves westward because the earth is turning eastward all the while, and the ocean, being a movable surface on a solid body, really hangs back a little, and that action results in a western trend of the waters at the equator, where the surface of the earth is moving the fastest, and this western movement along the equator draws into it from north and south the currents coming from the polar regions. Off Japan this equatorial stream of warmer water is from 500 to 600 miles wide, moves eighty miles a day and gives the shores of Formosa a temperature of 86°. After it curves back across the Pacific and warms the colder northern coast it moves southward. Because the greatest coast rainfall is at Cape Flattery, and there it is 125 in. a year, Prof. Davidson inclines to the opinion that there the Japan current, with its rain-bearing vapors, must strike its midstream. As this current passes San Francisco it widens to 1,000 miles and has given up a good deal of its warmth to the chilly coasts of the north.

Prof. Davidson has a record of some seventy Japanese junks carried away in typhoons and left to drift with the Japan stream, and the wrecks, a few of them with men on board, show where the stream strikes all around the great curve and away around to the Hawaiian islands. He spoke of one junk that had been picked up 300 miles southwestward of Santa Barbara, with three survivors of a large crew, after drifting for 517 days in the Japan stream, thousands of miles. From that drift the rate of the movement of the stream was found to be ten miles a day.

Prof. Davidson told of a so-called tidal wave that had struck the Pacific coast, and explained that it was an earthquake wave from Japan. It crossed the Pacific ocean, about 6,000 miles, in eleven and a half minutes, and made itself felt way up into the Tuolumne river and in San Francisco and San Diego bays. From that wave rate the scientists computed the average depth of the Pacific between San Francisco and Japan to be between 2,700 and 2,800 fathoms, and they established this before the ocean cable layers in the Atlantic had learned the depth of that ocean.

SHIP BUILDING IN PHILADELPHIA AND VICINITY.

Philadelphia, May 7.—The torpedo boat destroyer Chauncey has been in dry dock in Baltimore for the past few days having her bottom scraped and painted in preparation for the official trial, to be run this week over the Barren island course in Chesapeake bay. The speed requirement has been amended to read 28 knots, instead of 29, stipulated in the original contract, and the Neafie & Levy company, builders of the vessel, are now more confident regarding the outcome. Their first boat, the Bainbridge, managed to make 28 knots, notwithstanding defective blower apparatus. Since the draft apparatus has been remodelled on the Bainbridge, Barry and Chauncey ship builders in this locality assert that with the original design of these vessels 29 knots was possible, but so many changes were decided upon by the government while the boats were building that their displacement has been materially increased to the detriment of their speed.

In the imposing array of contracts which it has on hand at present the New York Ship Building Co. presents a scene of busy activity in startling contrast to the desolate and waste land on which in less than three years it grew into existence. Six big merchant vessels are on the ways in various stages of completion, and launches will follow at short intervals this summer. The new tanker, J. M. Guffey, is now complete and has been dry docked at Wilmington for a final cleaning and painting. The keel of the new tanker building for the J. M. Guffey Petroleum Co. is down and rapid progress is being made in framing the vessel. This vessel will be of 2,500,000 gallons capacity and will embody every modern device for ships of her kind, including oil burning furnaces.

The New York company, having its new plant now practically complete, will without doubt enter a bid in the next letting of contracts for naval vessels. Its present equipment is sufficient for the construction of the largest battleship likely to be authorized, and it is prepared to compete with any ship yard on the Atlantic seaboard.

The Russian battleship Retvizan has sailed for Kronstadt, via Cherbourg, France. Her departure was to the accompaniment of renewed assurances of good will from Capt. Stchensnovitch and his staff, and regret in that they were finally obliged to leave this city, of which they have been residents for the past four years. Chief Engineer Cox, attached to the Cramp yard, accompanied the Retvizan and will remain on board until the operation of the boilers and engines has become thoroughly familiar to her engine room force.

In addition to the rapid work under way at the Cramp yard on the Pennsylvania, which was mentioned last week in this correspondence, the battleship Maine is not neglected. There is every probability that the Maine will be sufficiently advanced to permit of a builders' trial trip within two months. The engines and boilers have been installed and a dock trial can be undertaken at any time. The Cramp erecting shop is busy at present with the engines for the Colorado and Pennsylvania and on the preliminaries for those of the cruiser ordered by Turkey. The latter vessel has been started in the ship yard, but as there is no time clause in the contract no great effort has been made to hurry construction.

THE PERTURBATION OF JOHN BULL.

Henry Labouchere in this week's Truth, London, under the heading of "Morganeering and the Moral," tells the British nation that its supremacy in trade and commerce is not only threatened but doomed and that it will take all the best efforts of which the empire is capable to prevent a retrograde movement. He says:

"To the impartial observer it is a trifle amusing to watch the perturbation of John Bull at the march of the American capitalist. For a generation or two past the gospel of salvation of mankind by the agency of British capital has been preached with sincere conviction by British politicians. British men of business and almost every British man in every British street, whether it was a dying nation in Europe or Asia, a rickety republic in South America, an unreclaimed region of Africa, peopled by idolators and cannibals, or even a poverty-stricken British colony, said that the means of regeneration were the same—let British capital and enterprise exploit the patient thoroughly and there would be an end to all his diseases, political, economic and social. Americans, in their turn, now aspire to regenerate the world by American capital and American enterprise. They practice upon us the doctrine which we so long applied to the rest of mankind. They acquire our underground railways with the kindly view of showing us how to work those antiquated undertakings profitably. They propose to provide poor old London with tramways and tubes which its people are too poor or too stupid to construct themselves. They acquire half the tobacco trade of these islands to confer upon us the benefits of being supplied with American goods on American principles. Lastly—for the present—they laid sacrilegious hands on the shipping, by means of which 'Britannia rules the waves.' No wonder John Bull is in a comic state of consternation. The world from his point of view is being turned completely upside down. He is no longer 'on top,' but underneath. Instead of the exploiter he is becoming exploited. Yet by utilizing to the best advantage our resources in raw material, capital and labor we can hold our own, even if we are forced to see Germany and America increase their output faster than we can. At the present crisis of our economic history, what are the objects which chiefly occupy our minds? They are the regeneration of South Africa by the introduction into that accursed land of British capital and labor, the expansion of our army at the expense of the labor market, squandering time, money and energy on the empty ostentation of the coronation ceremony, which will suspend industry, dislocate trade and divert public thought from matters of pressing and vital import."

Dorr, Whittlesey & Lee, Camden, N. J., have purchased the old ship yard and water front of Lewis H. St. John at Mariner's harbor, Staten island, for $60,000, and will put in facilities for the building of large vessels.

The Baltimore Marine Railway Co., Baltimore, Md., launched the fishing steamer Atlantic for the Atlantic Construction Co. of New York last week. The vessel is 140 ft. long, 24 ft. beam and 12 ft. depth of hold.

SHIP-CANAL TO PITTSBURGH.

OLD PROJECT OF A CANAL FROM THE LAKES TO THE REGION OF STEEL MANUFACTURE AND COAL MINES IS REVIVED IN CONGRESS BY REPRESENTATIVE DALZELL.

The old project of a ship-canal from Lake Erie to Pittsburgh is being revived in Washington. Representative Dalzell has introduced a bill to incorporate the Lake Erie & Ohio River Ship-Canal Co. for the purpose of constructing a canal from some convenient port on Lake Erie to Pittsburgh. Of course the one forcible objection to canals of this kind is that like the Manchester canal they are one-end affairs; that the only successful ship-canals of the world are those that connect great bodies of water, with long hauls at both ends for the large ships that use them. The Dalzell scheme is, however, interesting. The bill provides that the capital stock shall not exceed $300,000 a mile of canal constructed. The special purpose of incorporation is contained in the following provision:

"That the company is hereby empowered to construct and operate from some point at or near Pittsburgh on the headwaters of the Ohio river and near the junction of the Monongahela and Allegheny rivers; thence via the Ohio, Beaver and Mahoning rivers in Pennsylvania and the Mahoning river in Ohio to a point at or near Niles, O.; thence northwardly through the state of Ohio to the most accessible harbor on Lake Erie between the Pennsylvania and Ohio state line and the mouth of the Grand river in Ohio, including said river; also a branch canal from the mouth of the Shenango river, Pennsylvania; thence along the Shenango river to a point at or near Greenville, Pa.; also a branch canal from a point at or near Niles, O.; thence along the Mahoning river to a point at or near Warren, O.; the said main canal connecting the Ohio river and Lake Erie to be of such dimensions as to make and construct navigable channels of at least 15 ft. in depth, and having a standard cross-section of not less than 2,000 sq. ft. of area; construct, erect, maintain and operate all such locks, dams, towpaths, basins, tunnels, aqueducts, feeders to supply water from any lakes or rivers, reservoirs, cuttings, apparatus, appliances, and machinery as may be necessary for the construction and operation of the said canals; and such locks on such main canals shall not be less than 340 ft. between quoins, 45 ft. wide between lock walls, and 15 ft. depth of water on miter sills; and between the Ohio river and Lake Erie the total lockage shall not exceed 600 ft."

The bill is accompanied by a report from the committee on railways and canals which is so interesting that we give it practically in full. The report makes the proposed canal a perfect gold mine in saving money; but it seems that the committee has overlooked many vital considerations. No blind canal has ever paid expenses. Take Manchester. It is delinquent on its interest charges to the tune of several millions of pounds. The very purpose of the canal is to avoid transfer of cargo. The dimensions of the canal preclude the possibility of the larger carriers engaging in it. They all draw more than 15 ft. of water. Even if the largest type of carrier could be admitted to the canal, transfer of cargo would not even then be avoided, for the canal cannot deliver ore to the doors of the furnaces. Then again time is the great consideration on the lakes. The earning power of a vessel is the time which it actually spends in transit. The time spent at dock is time lost; and it seems that this canal would consume more time than anything else. However, here is the argument of the committee:

"This bill authorizes certain persons to organize the Lake Erie & Ohio River Ship-Canal Co., for the purpose of constructing a ship-canal from a point on the Ohio river at or near Pittsburgh to Lake Erie at or near Ashtabula, O. The company is given the rights and powers usually given to corporations engaged in interstate commerce, including the right of eminent domain. It is authorized to use the waters of certain streams for the purpose of operating its canals and works, providing it does not reduce the supply of water of any town, village or city below the reasonable requirements of such place. It is made liable to all persons for such damage as they may sustain to their property by reason of the construction and operation of this canal. It is given the right to demand and receive tolls for the use of its canal, but it is not permitted to give any rebate, reduction, or drawback of any kind to any person. Its capital stock is limited to the sum of $300,000 per mile, and its bonds to the same amount. At least $5,000 worth of stock for every mile of canal proposed to be constructed must be subscribed for and paid in in cash before the persons named as incorporators can complete the organization of the company or transact any other business. The amount of debt which the company may create is limited to the amount of the stock subscribed for and fully paid in and actually expended in the promotion, construction and maintenance of its canals and works. It is subject to the control of the interstate commerce commission, the same as if it were a railway corporation, and its schedule of tolls must be approved by that commission. Plans and specifications of the canal and works must be filed with the secretary of war and be approved by him before the construction shall be commenced. Its canals and works are declared to be public works, and the United States is given the right to use the same whenever it so desires. Provision is also made for the acquisition of the canals and works by the government, but in making payment for the same no value shall be considered or allowed for the franchise conferred by this bill.

"The main canal, when constructed, will be about 122 miles in length, 156½ ft. in width, and 15 ft. in depth. There will be thirty-four locks, each of which will be not less than 340 ft. long between quoins, 45 ft. wide between walls, and 15 ft. deep on miter sills. The purpose of this canal is to afford a waterway from the Ohio river and its tributaries to the great lakes.

"During the season of 1900 there were transported by rail between Pittsburgh and the ports on Lake Erie between Cleveland and Buffalo about 40,000,000 tons of freight. About 9,000,000 tons of this was iron ore, brought by boat from the mines near Lake Superior to Lake Erie ports, and from there shipped by rail to the furnaces at and near Pittsburgh. During the same season over 5,000,000 tons of coal and 2,000,000 tons of coke were transported by rail across this portage. This commerce must all pay transfer and dockage charges at the lake ports in addition to the high rates charged by the railroads.

"A conservative estimate of the amount of traffic which would seek this canal at its opening for transportation annually is as follows: Iron ore, 9,000,000 tons; coal, 5,000,000 tons; coke, 2,000,000 tons; manufactured products, 1,000,000 tons; limestone, lumber, building stone, and general merchandise, 1,500,000 tons, making a total of 18,500,000 tons. It is estimated that there would be a saving of at least 75 cents on every ton of iron ore, coal and coke, and a proportionate saving on all other freight transported by way of this route.

"Pittsburgh is the center of the coal and coke producing sections of Pennsylvania, Ohio and West Virginia. These commodities find a large and growing market in the cities on the great lakes. The construction of this canal means cheaper fuel, and thereby cheaper cost of living and of manufacturing in the districts connected with the great lakes. The ore from the iron mines of Wisconsin and Minnesota must be brought to the furnaces at Pittsburgh, and the food products of the northwest find ready market among the millions of people living at or near the headwaters of the Ohio river and its tributaries. The construction of this canal means cheaper food products and cheaper ores to the great manufacturing districts reached by it. Every dollar saved in the transportation of these commodities is a benefit alike to the producer and the consumer. The rich and extensive deposits of the Gogebic, Mesabi and Vermilion ranges bordering Lake Superior are being rapidly developed, but their conversion into mercantile products requires fuel, and the nearest extensive veins of coal are located on the tributaries of the Ohio, in Pennsylvania and West Virginia. Again, the manufacturers and miners of these latter districts require the agricultural products of the great grain fields of the northwest in exchange for the fuels which do not exist in those sections.

"The population of the Pittsburgh district within a radius of 60 miles was 1,608,000 in 1890. According to the last census it has increased over 20 per cent. and aggregates now, therefore, nearly 2,000,000. Interchange of commerce between this district and the lakes is now accomplished through the instrumentality of ten lines of railway between Pittsburgh and the lakes, requiring several transshipments and an additional overland movement at the head of Lake Superior. The total cost of these roads, with their equipment, with one exception, is said to be $172,141,738, while the average ton-mile rate on all freight on said lines is about 6.7 mills, which is below the ton-mile rate on the ore (8.85) and coal (8) to and from the Pittsburgh district, including transfer, and yet some of these roads are being operated almost continuously at a net loss on the capital invested.

	Tons.
The total commerce on the great lakes for the year ending Dec. 31, 1889, was about	53,424,432
That of the Atlantic coast was	77,597,626
The Pacific coast	8,818,262
Gulf of Mexico	2,864,956

"Of the lake traffic, 54.22 per cent. consisted of mineral products, 24.97 per cent. was lumber, and 16.41 per cent. agricultural, while 5.9 per cent. was miscellaneous. The average distance carried was 566 miles, and the total ton mileage was 15,518,360,000, while that for all the railroads of the United States was 68,727,223,146, so that the business of transportation on the great lakes was 22.6 per cent. of that of all the railways for 1889. Carefully checked statistics of the traffic over this portage between Lake Erie and the Ohio river indicate a tonnage at present not less than 7,000,000 tons of iron ore, 7,000,000 tons of coal, 2,000,000 tons of coke, 1,000,000 tons of heavy manufactured products, 1,500,000 tons of limestone, lumber and general merchandise, making a grand total of 18,500,000 tons, so that it would be safe to base an estimate on 13,000,000 as the probable tonnage over this much cheaper water route immediately after its completion, and this will form the basis of our estimate of revenue for the canal.

The present cost of ore from Lake Superior to Ashtabula per ton is	$0.80
From Ashtabula to Pittsburgh, including transfer and dockage charges	1.15
Total	1.95
By canal the charges would be:	
Ashtabula to Pittsburgh, via canal	.13
Canal toll per ton (old rate by Pittsburgh and Erie canal)	.25
Total	.38
Saving, $1.15 less $0.38	.77

"In the same manner the tariff on coal may be reduced from the present charge of $1.05 to 33 cents, a saving of 72 cents per ton. Thus coal can be delivered at Chicago for $1.67, at Duluth for $1.50 per ton, at New York for $1.75, and at Montreal for $1.60, with corresponding reductions for all points reached by the lake connections. Applying these economies to the existing traffic and omitting the inevitable increase resulting from reduced cost, there would result on the ore now used in the Pittsburgh, Mahoning and Shenango districts and the Ohio valley from Beaver to Bellaire a saving of $4,496,082, and on the return cargoes of coal $4,868,561, and of coke $1,414,044, or a total reduction on the price of coke, coal and iron ore of $10,778,687. In addition, the canal would earn in carrying the ore for these districts, at 25 and 15 cents, respectively, $1,515,014; on the coal at 20 cents, $1,352,378, and on coke, $301,657, a total revenue from these few items alone of $3,169,049, being 9.6 per cent. on $33,000,000. Hence we believe there is an ample margin for large returns from investments in this project, and there is abundant reason, and, in fact, urgent necessity, for its early completion in order that the entire lake region and its dependent territory may receive the benefits accruing from cheaper transportation and maintain the large plants now in competition with more favored localities.

The economy in—	
Six lake cities in coal alone would be	$11,852,876
Canal district in ore	4,496,082
The lake district in coke	1,414,044
Total	17,763,002

"Thus the annual economy resulting from the construction of this commercial highway would be more than half the estimated cost of the canal from these few items alone. The feasibility and practicability of this project has been thoroughly investigated by a committee of the chamber of commerce of the city of Pittsburgh which has reported favorably thereon. In addition to that, however, the Pennsylvania legislature, in 1889, author-

ized the appointment of a commission to make a survey for a ship-canal to connect the waters of Lake Erie with the Ohio river, and appropriated the sum of $10,000 for that purpose. That commission, consisting of engineers of note and experience, reported in favor of such a canal as is provided for in this bill.

"In view of the probability of the early construction of the Nicaragua canal, the construction of a canal at this point by the government can not be expected for a number of years. Private capital is willing to undertake this great enterprise, and there seems to be no good reason why it should not be given an opportunity to do so. At some future time, after the canal has been constructed, if the government desires to assume its control and make of it a free waterway for the benefit of commerce, it will have the the right to do so. The provisions of this measure create no liability whatsoever on the part of the government."

The report is accompanied by an appendix showing the growth of lake commerce during the past decade. These statistics are taken largely from the Marine Review. Some of the figures regarding lake commerce in the committee report quoted above are estimates, but they are fairly accurate. The gentlemen named in the bill as forming the Lake Erie & Ohio River Ship-Canal Co. are the following: George A. Kelley, B. F. Jones, Thomas P. Roberts, John E. Shaw, William Flynn, William E. Kennedy, Morrison Foster, W. L. Scaife, W. Harry Brown, D. E. Park, James H. Park, John A. Wood, Eugene M. O'Neill, James F. Hudson, H. J. Heinz, S. S. Marvin, D. P. Black, George H. Anderson, William P. Herbert, A. J. Logan, John Eaton and F. J. Hearne of Pittsburgh; W. S. Shallenberger of Rochester, Pa.; Joseph G. Butler, Jr., of Youngstown, O.; Simon Perkins of Sharon, Pa.; J. R. Harrah of Beaver, Pa.; and A. B. Fleming of Fairmont, W. Va.

WIRELESS TELEGRAPH SYSTEM FOR ALASKA.

Bids were opened on Wednesday in the office of Brig. Gen. A. W. Greeley, chief signal officer of the army, for establishing a wireless telegraph system in Alaska. Five proposals were received, but no decision as to the successful bidder will be reached until a board of officers of the signal corps has inquired into and tested the various systems offered. One of the conditions required by the government is that the bidders shall demonstrate their ability to transmit messages legibly for two consecutive days at a distance of 60 miles. They are also required to work each system satisfactorily for not less than ten nor more than twenty consecutive days. The bidders were the Marconi company of London, England; Foote, Pierson & Co. of New York; the American Wireless Telegraph & Telephone Co. of Philadelphia; the De Forest Wireless Telegraph Co. of New York and Queen & Co. of Philadelphia. The last named represents the system worked out by Prof. Fessenden and Prof. Moore, chief of the weather bureau. It is the same system that was so successfully tried recently between Roanoke island and Cape Hatteras. It appears to have an advantage in speed over all the systems presented and is looked upon with great favor by the officials. The points to be connected by wireless telegraphy are outlined in the specifications as follows: Between Fort Davis and some point on Stewart island about 90 nautical miles distant, or Fort Davis and Fort St. Michael's on St. Michael island, about 108 miles distant; between Rampart and Winter House on the Tanana river, about 136 miles distant, or preferably, between Fort Gibbon and some station on the Tanana river, a distance of about 155 miles. Queen & Co. in its proposal offers to deliver two sets of instruments to be used over the shorter distance for 13,000 and to instal the system for use over the longer distance for $15,000. It guarantees a minimum speed of from twenty-fiye to thirty words a minute to be received from a telephonic apparatus similar to that used at Cape Hatteras. It is proposed to have the apparatus ready within sixty days and to be able to have a preliminary test by the middle of July. The company also expresses the belief that it will be able to instal the system in Alaska not later than Oct. 1. The De Forest company offers to furnish four sets of instruments and to send messages at a speed of from twenty to twenty-five words a minute, the total cost being $39,000. Marconi guarantees a speed of not less than twelve words a minute and says that the short route can be equipped by Sept. 1 and the other route a month later. This is the only company which insists upon the payment of a royalty, and while this is waived for the first year, a royalty of $2,560 annually for each instrument will be required after that. In addition to this Marconi agrees to supply two sets for operating between Nome City and St. Michael's for $19,939 and two sets for operating between Fort Gibbon and a point on the Tanana river for $22,010. It is also required that where commercial messages are sent over the system the government shall pay the company 50 per cent. of whatever charge is made for the transmittal of such messages. The bids of the American Wireless Telegraph & Telephone Co. and Foote, Pierson & Co. do not include the installation of any special system. They agree to deliver only the instruments, the American Wireless Co. offering four sets of instruments for $14,200 and the Foote company four sets for $28,800.

A great story of a $15,000,000 harbor improvement deal comes from Chicago. It is said that a party of western capitalists are planning for a new harbor with elevators, docks and warehouse on the shore of Lake Michigan just south of the mouth of the Calumet river, and that it is their intention to make this the point of transfer from western trunk lines to lake steamers and from western to eastern trunk lines. The scheme is prompted by the fact that four belt line roads—the Western Indiana, the Calumet Terminal, the Elgin, Joliet & Eastern, and the Chicago, Lake Shore & Eastern—come down to the mouth of the Calumet. The Baltimore & Ohio and the Pennsylvania are big trunk lines now in the district.

Notice is given by Com'dr E. H. Gheen, inspector of the eleventh lighthouse district, that about May 8, 1902, a gas buoy painted red and marked "St. Clair Flats Canal, Lower Entrance, East Side, No. 24," and showing a fixed red light of 10 seconds duration with eclipse 10 seconds, will be established to mark the position of the former float light on the southeasterly edge of the lower end of the dredged channel leading into St. Clair Flats canal, and about 900 ft. south by east, one-eighth east, from St. Clair flats lower entrance west side gas buoy No. 21.

A rebuild costing about $50,000 has just been completed on the steamer Majestic, owned by T. Hurley of Detroit, and she left West Bay City, a few days ago, to load Clergue ore at Michipicoten.

Treasury Department, Office of General Superintendent U. S. Life-Saving Service, Washington, D. C., April 26, 1902. Sealed proposals will be received at this office until 2 o'clock p. m. of Monday, the 26th day of May, 1902, and then publicly opened, for furnishing supplies required for use of the Life-Saving Service for the fiscal year ending June 30, 1903; the supplies to be delivered at such points in New York City, Grand Haven, Mich., and San Francisco, Cal., as may be required, and in the quantities named in the specifications. The supplies needed consist of Beds and Bedding; Blocks and Sheaves; Cordage; Crockery; Furniture; Hardware; Lamps, Lanterns, etc.; Medicines, etc.; Paints, Oils, etc.; Ship Chandlery; Stoves, etc.; Tools and Miscellaneous Articles; all of which are enumerated in the specifications attached to the form of bid, etc., which may be obtained upon application to this office, or to the Inspector of Life-Saving Stations, 17 State St., New York City; Superintendent Twelfth Life-Saving District, Grand Haven, Mich.; and Superintendent Thirteenth Life-Saving District, New Appraisers' Stores, San Francisco, Cal. Envelopes containing proposals should be addressed to the "General Superintendent U. S. Life-Saving Service, Washington, D. C." and marked on the outside "Proposal for Annual Supplies." The right is reserved to reject any or all bids, and to waive defects, if deemed for the interests of the Government. S. I. KIMBALL, General Superintendent.
May 8.

U. S. ENGINEER OFFICE, Jones Building, Detroit, Mich., April 19, 1902. Sealed proposals for dredging, and other work required for removing obstructions to navigation in main Ship Channel, between Sault Ste. Marie, Mich., and Lake Huron, will be received here until 12 noon (Standard time), May 19, 1902, and then publicly opened. Information furnished on application. W. H. BIXBY, Major, Engrs.
May 15

The Erie & Western Transportation Co. ANCHOR LINE. 1902.

Passenger Service—
Steamers.....India, China, Japan.
Ports of call... Buffalo, Detroit, Erie, Sault Ste. Marie, Mackinac Island, Hancock, Marquette, Duluth, Cleveland, Houghton.

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Steamers.....Alaska, Schuylkill, Delaware, Lycoming, Conemaugh, Codorus, Conestoga, Juniata, Mahoning, Clarion, Lehigh, Susquehanna, Wissahickon.
Ports of call... Buffalo, Detroit, Houghton, Erie, W. Superior, Sault Ste. Marie, Cleveland, Hancock, Chicago, Marquette, Duluth, Milwaukee.

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TRADE NOTES.

Stockholders of the General Electric Co. have voted to increase the capital stock to $45,000,000.

The Kingsford Foundry & Machine Works, Oswego, N. Y., has just issued a little catalogue devoted to their marine boilers, centrifugal pumping machinery, excavators and marine engines. The catalogue is instructive and argumentative throughout and is well worth writing for.

The latest catalogue of M. T. Davidson, 43-53 Keap street, Brooklyn, N. Y., reaches the dignity of a book. It is carefully printed, well illustrated and thoroughly indexed. It deals with steam pumps, pumping engines, power pumps, condensers, evaporating and distilling apparatus, and ash ejectors.

Officers of vessels managed in the office of S. R. Chamberlain & Co., Sherman street, Chicago, are: Steamers—H. L. Worthington, Capt. Wm. Chamberlain, Engineer John H. Murdoch; Ogemaw, Capt. Martin O'Toole, Engineer ———. Schooners—A. T. Bliss, Capt. James T. Johnson; J. B. Wilbor, Capt. E. S. Hellesey; D. R. Martin, Capt. Wm. J. O'Brien.

Black and red on gray stock make a very attractive cover for the latest catalogue of the Philadelphia Pneumatic Tool Co. The body of the book is printed in brown. The catalogue deals quite copiously with the Keller pneumatic hammers, riveters, rotary drills, foundry rammers and other makes of pneumatic tools. It will be sent to anyone interested upon application.

It is officially announced that on and after July 1, 1902, the Railroad Supply Co. and the Q. & C. Co. of Chicago will be operated separately as previous to Jan. 1, 1901, except that all interests pertaining to tie plates have been sold by the Q. & C. Co. and will be hereafter conducted by the Railroad Supply Co. In this division of business interests is included the good will, the best feeling and co-operation of each with the other.

The American Blower Co. of Detroit is doing a very extensive business in the installation of mechanical draft apparatus. Among other orders recently secured may be mentioned equipment for the San Francisco (Cal.) custom house and postoffice; Queen's University, Kingston, Ont.; Bee Hive Hygienic Ice Co., Brooklyn; Indianapolis (Ind.) Water Co.; Metropolitan Electric Co., Reading, Pa.; Marysville (O.) Light & Water Co.

The Alberger Condenser Co., 95 Liberty street, New York, has just issued a catalogue devoted to the Alberger cooling towers. This company manufactures high grade condensing engines and pumping machinery. The catalogue is well illustrated, both in line and in half-tone. Cooling towers were commercially introduced into this country about ten years ago. Since that time they have been installed in a great variety of situations and have become recognized as an important and valuable adjunct to power stations and refrigerating plants where the water supply is limited.

Halifax voted overwhelmingly last week in favor of the proposition that the city should grant a bonus of $100,000 for the establishment of a ship building industry on the shores of that harbor. The town of Dartsmouth, across the bay, voted a similar amount and the Nova Scotia legislature at its session also voted $100,000. The proposition has been developed from the offer of Messrs. Swan & Hunter of Newcastle-on-Tyne to establish a yard and contribute half the necessary capital if such a bonus, as has now been determined upon, should be raised.

By the narrow majority of one the supreme court has sustained the contention of former Speaker Thomas B. Reed that the molten metal carrier and mixer patented by Capt. William R. Jones of the Edgar-Thomson Steel Works was a meritorious invention and directed the United States court for the western district of Pennsylvania to enter a decree for an injunction to prevent the Cambria Iron Co. from using it without the consent of the Carnegie Steel Co., which owns the patent. The judgment of the court was announced by Justice Brown, who briefly reviewed the steps in the litigation over the patent, which was described as being for a "method of mixing molten pig metal." A caustic dissent was announced by Justice White, in which the chief justice and Justices Harlan and Brewer concurred.

From the Buffalo Forge Co., Buffalo, N. Y., comes report of the usual brisk demand for their products in blowers, forges and other specialties. Among numerous orders of recent date may be noted one for the equipment of the Pennsylvania Steel Co.'s forge shop at Philadelphia with twenty down-draft forges. The Lake Shore & Michigan Southern Ry. Co. has ordered three large fan-system heating plants for shops at Collinwood, near Cleveland. This order involves the heating and ventilating of the Lake Shore company's wood-working mill, passenger coach paint shop and freight car repair shop. The Bowery Bay Building & Improvement Co., New York city, is to be furnished with a 200 H.P. horizontal center crank engine for electric lighting purposes. This company bought from the Buffalo Forge Co. the engine that was awarded a gold medal at the Omaha exposition in 1898. This engine has been in active service at the New York company's works since date of purchase. The order just entered calls for an engine of the same type, but of larger horse power. The Buffalo company is also to furnish the Seaboard Realty Co. of New York city for electric lighting purposes six 120 H.P. engines and two 95 H.P. engines.

In order to revive the drooping sugar trade of the West Indies the Elder, Dempster Steamship Co. has offered to carry the sugar free of charge to British ports. This is equivalent to an export bounty of $5 per ton.

The John A. Roebling's Sons Co. of Trenton, N. J., has just completed negotiations for the purchase of a large tract of land near St. Louis on which it will shortly build up an extensive branch industry. The branch plant will employ about 500 men.

M. B. McDonald, Mystic, Conn., has secured a contract to build a five-masted wooden schooner for Capt. Lucius J. Stevens of Clinton, Conn. Her dimensions are: Length, 240 ft.; beam, 46 ft.; depth of hold, 21 ft.

"BENEDICT-NICKEL" Seamless Condenser Tubes
are the only ones that resist electrolysis.
Far superior to brass or copper.
Our treatise on "Electrolysis of Condenser Tubes" tells why—send for it.
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New York to Havre-Paris in less than one week.
Steamers sail from New York every Thursday, at 10 a. m.
Company's own vestibuled train from Havre to Paris in four hours.
FLEET 70 STEAMERS.
In New York service the following gigantic Twin Screw Steamers:

"LA LORRAINE"	(new)	Twin Screw		15,000 tons	22,000	H.P.
"LA SAVOIE"	(new)	"	"	15,000 "	22,000	"
"LA TOURAINE"	(modern)	"	"	10,000 "	12,000	"
"L'AQUITAINE"	(modern)	"	"	10,000 "	16,000	"

Naval officers command above steamers, insuring the same strict discipline as on a man-of-war. These ships all have double bottoms and water-tight compartments, and prescribed routes are taken to avoid fogs. The above steamers contain every modern twentieth century equipment for safety, most luxurious accommodations, and the cuisine is famous. The favorite route of the elite of both continents. For rates, plans and other particulars apply to
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of modern vessels especially those in the passenger service should demonstrate the supreme possibilities of the wood finisher's art.
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ANCHORS CAST AND TESTED ON ORDER, OR STOCK ORDERS PROMPTLY FILLED.
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OPEN-HEARTH STEEL CASTINGS OF THE HIGHEST GRADE.
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MACHINE WORK AND PATTERNS FURNISHED WHEN REQUIRED.
RAIL OR WATER DELIVERIES.
CAPACITY, 1500 TONS PER MONTH
Seaboard Steel Casting Co.,
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A Splendid Book and a Timely One

MODERN SEAMANSHIP

Lt. Comd'r Austen M. Knight.

Is the title of a book recently written by Lieut. Comd'r Austen M. Knight, executive officer of the cruiser Olympia. The title of the volume could not be more appropriate. Seamanship is as old as the deluge. From century to century, through the connecting link of generations, seamanship has been handed down to us. Until as late as forty years ago seamanship was the supreme art of the sea.

But changes, wonderful to contemplate, have marked the last half century. The name of the great revolution was steam. Through its agency seamanship lost its old command. It became subordinate to the science of navigation. All existing volumes upon seamanship speedily became obsolete. But yesterday of unquestioned authority, today they are merely junk. Such is the moving panorama of the world's progress that its views appear, like opportunity, but once upon the scene and are gone. How appropriate, therefore, is its title "Modern Seamanship." It has to do with seamanship as it exists today, when every sea is charted, when even the rise and fall of the tides in every part of the world is computed by machinery, when hurricanes can hurl their awful force against the ocean liner—not to destroy but merely to check. "The hurricane reached its maximum at twelve and the Kronprinz Wilhelm checked down"—the dispatches will say. Checked down to what? To 19 knots. Twenty-five years ago there wasn't a steamship afloat that could make 19 knots in the smoothest sea that ever was sailed. This is the seamanship the book deals with. It embraces all, the old and the new, but its great virtue is that it is distinctly modern.

We are in the business of handling books, but when the printer sent us this product of his handiwork, we complimented him. It is a large book but it is superb to the least detail of its 428 pages, to which must be added 136 of the finest and clearest plates we have ever seen. No book has received more favorable notices. Even the daily press, usually as dumb as oysters when a technical volume appears, have devoted columns to it. It has been adopted as a text book at the United States Naval Academy. We should think that every person interested in modern seamanship, in the science of navigation, in the building, equipping and managing of a ship would want it. We shall be glad to send it to anyone. THE PRICE IS $6.

THE MARINE REVIEW PUBLISHING CO.,

39-41 WADE BUILDING, - - CLEVELAND, O.

"PRESERVO" WILL NOT CRACK, SCALE, FREEZE OR STICK—SEE PAGE 8.

ABSORBS AN ENGLISH PNEUMATIC TOOL CO.

A London dispatch announces that J. W. Duntley, president of the Chicago Pneumatic Tool Co., and E. N. Hurley, former president of the Standard Pneumatic Tool Co., have practically effected the purchase of the International Pneumatic Tool Co., a powerful English concern. Mr. Duntley said that the recent successful experiments at the Portsmouth dock yard convinced the admiralty that pneumatic riveting tools were necessary. The International company turns out about $30,000 worth of machinery a month. It will continue manufacturing for the continent at the works at Chippenham, Wiltshire. The question of the use of the tools admits of but one solution, Mr. Duntley says. The increase in the tonnage of vessels, which necessitates increased thickness of hull, virtually renders the use of power-driven rivets compulsory.

Mr. W. O. Duntley, vice-president of the Chicago Pneumatic Tool Co., says that while he has not received any confirmatory cablegram from London he believes the advices to be correct. He adds that there will be no change in the company as the result of the absorption of the English interests.

Location of the property purchased in Cleveland by the Cleveland Furnace Co. (a new corporation controlled by Rogers, Brown & Co.) for blast furnace purposes has been made public. It is a tract of 156 acres fronting on the main river, just above the Wheeling & Lake Erie railroad bridge near Clark avenue. The belt line railway around the city runs through the property and it is very close also to the Wheeling & Lake Erie and the Cleveland Terminal & Valley. Contracts for the necessary machinery are being closed and work on the furnace itself, which will be in operation in a year, will be started in a short time. That part of the river where the land is located is shallow and considerable dredging will have to be done before carriers of ore and limestone will be able to reach the docks, but officials of the company say the channel will be put in shape before they are ready to receive ore.

The large auxiliary schooner Ariadne, building at Wilmington, Del., for Henry W. Putnam, Jr., will be launched today, Thursday. On her first cruise she will double Cape Horn on an extended voyage to the Pacific. This is a magnificent yacht, measuring 140 ft. over all, on a waterline of 110 ft. Her beam is 26 ft. and her draught 14 ft. Her model is almost the same as the schooner Endymion, which holds the yacht ocean record, being designed by the same man, Mr. Crane, who has given her 10 ft. more waterline than the Endymion. The Ariadne is expected to do 8 knots under auxiliary power, for which she has compound engines and water-tube boilers, but she will make her best cruising passages under the wide spread of canvas that has been sketched out for her.

The torpedo boat destroyer Stewart will be launched on Saturday at the works of the Gas Engine & Power Co. and Charles L. Seabury & Co., Consolidated, Morris Heights, New York.

NEW YORK VIA WASHINGTON, D. C.

At ticket offices of the Pennsylvania Lines tickets to New York via Washington, D. C., may be secured at same first-class rate that applies via the direct line.

Tickets via Washington are good for stop at Baltimore, Washington and Philadelphia, ten days at each point being allowed.

For rates, time of trains, etc., apply to nearest ticket agent, or address C. L. Kimball, Ass't. Gen'l. Pass. Agent, Cleveland, O. May 15.

A particularly useful pump for boiler inspectors, marine engineers and boat owners generally, is that which is made by the Marine Iron Works, station A, Chicago, as illustrated on page 41 of their 1901 catalogue, which is sent free on receipt of request. 7

Sealed proposals will be received at the office of the Light-House Board, Washington, D. C., until 2 o'clock p. m., June 6, 1902, and then opened, for furnishing the materials and labor of all kinds necessary for the construction and delivery of the twin-screw steel steam light-house tender Crocus for a fixed sum for said vessel delivered either at the Buoy Depot, Buffalo, N. Y., or at the Light-House Depot, Tompkinsville, N. Y., as will be determined upon by the Light-House Board. Proposals, plans and specifications can be had by applying to the Light-House Board, Washington, D. C., or at the office of the Light-House Inspector, Buffalo, N. Y. NORMAN H. FARQUHAR, Rear-Admiral, U. S. N., Chairman. May 15.

Sailing Vessel Wanted.

Vessel of 200 tons; 10 ft. draught, loaded; centerboard. Address P. O. Box 72, Mobile, Ala. May 29.

Scotch Boiler For Sale.

Scotch boiler, 14 ft. diameter by 13 ft. Lying at Detroit Ship Building Co.'s Works. Address James Corrigan, 418 Perry-Payne bldg., Cleveland. tf.

Engine and Boiler Wanted.

Wanted—A 14x16 or 16x16 marine engine; also boiler of sufficient capacity to supply steam for same at not less than 125 lbs. pressure. Address 407 Chamber of Commerce building, Toledo, O. May 29.

Barge For Sale.

Of about 500 M lumber capacity. Rates A2½. In good shape. Practically all rebuilt a year ago. Thoroughly recalked this winter. Price $3,500. Address Box 27, the Marine Review Pub. Co., 39-41 Wade building, Cleveland. tf.

BELLEVILLE GENERATORS

Grand Prix 1889 — Hors Concours 1900
Originated 1849 — Latest Patents 1902

Number of Nautical Miles made each year by Steamships of the Messageries Maritimes Co., Provided with Belleville Generators—Since their Adoption in the Service.

Year.	Australien	Polynésien	Armand Béhic	Ville de la Ciotat	Ernest Simons	Chili	Cordillère	Laos	Indus	Tonkin	Annam	Atlantique
1890	67,728	2,460										
1891	68,247	68,331	204									
1892	68,247	68,403	69,822	23,259								
1893	68,379	68,343	68,286	68,247								
1894	68,439	68,367	68.574	68,439	37,701							
1895	68,673	68,766	68,739	68,808	40,887	28,713						
1896	69,534	92,718	69,696	69,549	62,205	63,153	40,716					
1897	68,250	69,606	92,736	69,555	62,235	76,110	63,357	43,146				
1898	70,938	69,534	69,552	69,597	62,526	63,240	63,240	62,553	63,954	22,707		
1899	69,534	69,615	67,431	90,405	60,246	62,778	62,868	52,344	54,855	44,007	22,884	
1900	69,534	67,494	69,744	69,564	61,719	62,382	62,502	51,471	53,373	62,016	63,066	52,140
1901	44,220	69,627	69,594	66,948	51,057	62,460	62,490	61,743	62,688	43,866	62,466	63,126
Total	801,723	783,264	714,378	664,371	438,576	418,836	355,173	271,257	234,870	172,596	148,416	115,266

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TELEGRAPHIC ADDRESS: BELLEVILLE, SAINT-DENIS-SUR-SEINE.